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Long-Term Outlook for the World Economy

Issues and Projections for the 1990s

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Deregulation and liberalization of product, labor, and financial markets — together with higher levels of investment and rapid technological advances in industrial and services sectors — should make the 1990s a period of rapid growth in the high-income OECD countries and a number of leading developing countries. But the pattern of international financial flows is likely to perpetuate two tracks of high and low growth in the developing world.

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This paper is a product of the Long-Term Outlook Project in the International Economic Analysis and Prospects Division (IECAP), International Economics Department. The quantification, analysis, and projections in this paper reflect work mainly completed in mid-1989 and draw upon results of the 1988 Unified Survey of Bank Country Economists and various analyses prepared by IECAP. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Jackie Queen, room S7-212, extension 33740 (96 pages with charts and tables plus 7 pages of annexes).

Fardoust and Dhareshwar argue that, at the broad level of global analysis, there are good reasons to be optimistic about the 1990s. First, there are favorable supply-side developments in many of the high-income countries. Per capita real income growth rates in the 1990s are expected to be higher than in the 1980s: higher by about 0.5 percent per year for the industrial countries, and higher by as much as 1 percent per year for developing countries, on average. If there are no major policy mistakes and the international financial markets remain reasonably stable, the remarkable rebound in investment rates observed during the past few years should promote a period of relatively rapid and noninflationary growth in these countries. Second, considerable scope exists for a recovery of private consumption and investment in the debt-stricken developing countries, as well as in Eastern Europe and the USSR. Therefore, while concerns about financial volatility and about current economic slowdown in some of the major industrial countries cloud the world economic outlook in the short run, the long-term prospects for the industrial and leading developing countries are quite favorable.

The 1990s will see a continuation of the process of economic integration currently under way, encompassing mainly the industrialized and the newly industrializing economies, propelled by rapid technological progress and increased competition in international markets, and taking place against a backdrop of policy reforms, economic restructuring, and political liberalization that has been gathering momentum since the early 1980s. Several ongoing economic and political events — principally Project 1992, which aims for a deeper integration of the European Community, the ongoing changes in Eastern Europe and the USSR, and successful completion of the Uruguay Round of trade negotiations — may also act as growth impulses in the 1990s.

In marked contrast to the generally upbeat outlook for the developed world, the prospects are less certain for the developing regions, where performance is more diverse. The major sources of uncertainty are the level and cost of financial flows the developing countries can expect, the degree of their own success in implementing policy reforms and structural adjustments, and the strength of world trade and the extent of openness of the industrial-country markets to developing-country exports.

Given the inevitability of economic shocks, adaptability and economic resilience will be essential for satisfactory performance of the developing countries in the 1990s. With international prices and market structures changing radically, countries that lag behind in economic reform and in making the investments needed for growth are likely to suffer a significant decline in their relative standards of living during the 1990s.

According to Fardoust and Dhareshwar, the expected pattern of international trade and investment flows in the 1990s is likely to perpetuate two tracks of growth in the developing world. While growth may be expected to be high in many Asian industrializing economies, relatively high population growth and low private investment will probably continue to depress living standards in many countries in Latin America and Sub-Saharan Africa. The substantial differences in investment rates of the 1980s between the higher-income and other developing countries will, if not reversed, tend to widen the productivity and technology gap between them.

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1. INTRODUCTION AND SUMMARY

The state of global development in the 1990s will be greatly influenced by the economic adjustment, restructuring, and market-oriented reforms that have been taking place in many countries during the 1980s. Thus the future will differ from an extrapolation of postwar trends. While a significant number of countries could fall behind, many should be able to benefit, depending mainly on their own initiative, and secondarily on the evolution of global development strategy and effort. This paper describes the likely winners and losers, tells why, and concludes by attempting to delineate the challenge for long-run development policy.

In the postwar era, restoration of stability was a leading objective; many regulatory schemes were introduced by governments to enhance economic, social and political stability. Although stability proved to be conducive to economic growth for two decades, over time the new policies brought about rigidities in the functioning of markets as well as rising inflation. These rigidities, in turn, tended to impede private investment and, thereby, economic growth, with the result that during the 1970s both growth and stability suffered. The 1980s witnessed the beginnings of reform, as political systems began responding to perceived shortcomings.

These reforms are beginning to show some positive results. Since the mid-1980s, after several years of general weakness in business activity, many industrial countries and newly-industrializing developing economies have begun to experience a significant increase in private investment across all economic sectors. With the rise in investment, the pace of technological progress and its diffusion into the production process have become more rapid, particularly in the field of microelectronics, and more recently in genetic engineering. In the industrial countries, the new generation of technologies has brought about the introduction of industrial robots and a new generation of machines that are more efficient to operate and allow far more flexibility in the production process than before. As a result, growth rates of productivity are beginning to show some improvement in a number of major industrial countries, especially when compared with the mediocre record of last 15 years. Technical progress and its diffusion have also helped to generate a wide range of new products and processes, which are being rapidly introduced in international markets. Among these products, services are at least as dynamic as goods.

The opportunities and challenges presented by technical progress and liberalizing policies in the relatively industrialized economies are stimulating structural reforms in some developing countries and a number of centrally planned economies. If successfully implemented on a sustainable basis, these reforms should result in a more adaptable and resilient economy in these countries. Given the inevitability of economic shocks, adaptability will be essential for satisfactory performance in the 1990s. International prices and market structures will continue to change radically and, as regards detail and timing, unpredictably. The countries that lag behind in introducing economic reforms, fail to restructure and retool their industries, and are unable to keep up their investment in human capital and in the new process technologies can be expected to suffer a relative, and perhaps even an absolute, deterioration in their standard of living.[1/]

Looking beyond the financial uncertainties (mainly due to the massive external payments imbalances the major industrial countries) clouding the world economic outlook in the shorter run, we see a number of positive factors that are likely to lead to a higher non-inflationary growth path than the world has enjoyed since the early 1970s. In the absence of major adverse shock, the long-term economic prospects for the industrial countries and a number of leading economies in the developing regions are quite favorable. However, the pattern of international financial flows that is apt to accompany this improved global trend will, under presently-foreseeable conditions, leave a large number of low- and middle-income countries on the sidelines, essentially marginalized by dynamics that favor the leaders. These countries may continue to find it difficult even to maintain their present standards of living. Absent a sea-change in the strategy and organization of the global development effort and in their own domestic policies, economic growth and productivity increase in these countries will be impeded by high population growth, especially in Africa, and by an inadequate level of investment, which will probably continue to be depressed as long as the level of net financial flows to these countries remains adverse.

The problem of rectifying this adversity in development finance goes beyond the current phase of the "debt crisis" and extends to demographic, technological, and environmental factors which will influence the future allocation of capital and that may tend to perpetuate a "two-tracks" (high and low) growth pattern in the

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1/ For recent detailed studies by Bank Staff on the effects of policy reforms on the economic performance of developing countries, see The World Bank, *Sub-Saharan Africa: From Crisis to Sustainable Growth*, 1989, and The World Bank, "Report on Adjustment Lending," Staff Study, 1988 (processed).

world economy.[2/] The analysis and projections that follow reflect an attempt to take these longer-term influences into account.

Summary of Main Issues

The predominant characteristic of the world economy in the decade of the 1990s is likely to be a continuation of the process of economic integration currently under way, encompassing the industrialized and the newly industrializing economies. The rapid pace and wide-ranging nature of the current wave of technological change and a higher level of competition in international markets are the major driving forces behind the trend toward integration. In turn, the key underlying factor that ties these trends together and that has proved to be a major impulse for them is the conjunction of policy reforms, economic restructuring, and political liberalization that have been gathering momentum since the early 1980s throughout the world.

Industrial Countries

In line with these developments, the economic performance of the High-Income OECD countries is likely to be markedly better in the 1990s than it has been in the 1980s. While they are not likely to reach the record growth rates set in the 1960s (the so-called "golden age"), the High-Income OECD countries should experience an acceleration in the pace of productivity and real income growth, on the assumption of stable conditions in the global financial markets. The average real income per capita for these countries is expected to rise at an annual rate of 2.6 percent in the 1990s, compared with 2.2 percent in the 1980s. The average rate of inflation is expected to remain fairly low, between 3 and 4 percent per year.

Developing Countries

For the developing countries as a group, the prospects for the 1990s are more uncertain, the major sources of the uncertainty being: the level and cost of financial flows to the developing countries; the degree of success of individual countries in implementing appropriate policy reforms and structural adjustments; and the strength of world trade and the degree of openness of the industrial-country markets to exports from developing countries.

2/ See The World Bank (IECAP), "The Developing Countries and the Short-Term Outlook for the Global Economy," January 1989 and June 1989 issues; and Louis Emmerij (ed.) *One World or Several?*, OECD, Paris, 1989; and in the same volume, Colin Bradford, "The Problem Quantified."

Although the average real income per capita of the developing countries as a group could rise by as much as 3 percent per year in the 1990s, the figure, while it is in line with the long-term trend, masks a substantial diversity of performance within the broad group. For example, the Asian NIEs are expected to grow at an annual rate of nearly 7 percent (5.5 percent per capita), while Sub-Saharan Africa is projected to grow at an annual rate of about 4 percent (less than 1 percent per capita). These are not trend projections alone; the disparity in the expected growth performance of these two groups is intimately related to their differences in investment outlay, human capital spending, external debt burden and population growth rates.

Many other developing economies could experience markedly faster growth in the 1990s than they did in the 1980s if they are successful in implementing the policy reforms and structural adjustments needed to enhance their productive efficiency. But it will be a doubly formidable challenge. For one, because of the debt overhang, many of these countries may be forced to rely more on domestic savings and foreign direct investment for financing domestic investment projects, while they try, at the same time, not to lose access to new technologies. For another, a large number of these countries are expected to face a substantial increase in their labor supply in the 1990s because of their relatively high population growth. Thus, these countries will be confronted with the task of raising the level of productivity, while they must, at the same time, absorb the increasing additions to the labor force.

Reasons for Optimism for the 1990s

The major underlying currents that account for the overall hopefulness, albeit a guarded and modest one, about the prospects of the industrial economies in the 1990s are: the ongoing attempts in a large number of countries to introduce structural reforms and to deregulate and liberalize their product, labor, and financial markets; the rapid pace of technological advance with widespread application for industrial and service sectors, which, together with higher levels of investment, should result in a faster diffusion of new technologies and a marked improvement in productivity performance; important economic and political events, such as, Project 1992 for a deeper integration of the European Community and the major ongoing changes in Eastern Europe and the USSR with a high likelihood of their integration in the international economy to a considerable degree; and the significant lowering of trade barriers that could result from the successful completion of the ongoing Uruguay Round of trade negotiations.

Reasons for Concern

Two areas that present considerable downside risk to the prospects of the world economy in the 1990s are: global financial volatility that arises from, among other things, the massive external-payments imbalances of the major industrial countries and the uncertainties about the environment. A crisis erupting in either of these areas may well result in a sharp drop in the rate of economic growth worldwide.

Past experience has shown that the potential for growth and prosperity offered by a favorable constellation of events and factors can be squandered by the failure of policymakers to recognize the nature of the risks and take steps to deal with them. Policymakers in the major industrial countries could, through the correct set of policies, ensure gradual reduction of the external-payments imbalances that currently afflict their economies. It was a financial crisis that was responsible for the depression of the 1930s and for the economic malaise of many developing countries in the 1980s. It is imperative to avoid major financial crises.

It is difficult to quantify the impact of changes in environment on the long-term growth prospects of the world economy because of the complexity of the issues and the fact that the nature of the linkages are not yet fully understood. Nevertheless, in this area policy needs to be forward-looking and farther-seeing in order to obviate disasters that could prove to be much costlier than even a massive financial crisis.

2. OVERVIEW OF MAJOR TRENDS AND KEY DEVELOPMENT ISSUES

2.1 Two Decades of Structural Change in the World Economy

During the past twenty-five years, the world economy has become far more interdependent than in any previous period (Table 1). While the growing interdependence has led to a dynamic of economic convergence among the industrial countries and some of the leading developing economies, there has been a widening of the income gap between the more industrialized countries and a large number of developing countries and an emergence of increasing diversity of economic structure and performance within the developing regions.

By the end of the 1970s, the accumulation of structural rigidities and internal as well as external imbalances, built up over the years mainly on account of faulty domestic economic policies, had made a large number of developing economies vulnerable to large external shocks. Also, many developing countries tended to ignore the ongoing structural shifts in the world economy. Therefore, when the global economic environment deteriorated, particularly in the first half of the 1980s, many developing economies were hit hard. Sub-Saharan Africa, a region that had already been experiencing economic difficulties since the mid-1970s, along with many of the poorest developing countries, suffered a major economic setback in a relatively short time span, as its average per capita income fell by 15 percent and its share in world output fell by more than 50 percent between 1980 and 1986. Also, the highly indebted countries – some of them among the largest economies in the middle-income group – saw their share in world output decline by 36 percent between 1980 and 1986.

In contrast, by the mid-1980s, a few middle-income countries (for example, Korea and Taiwan, China) had, galvanized by the rapid growth of their manufactures and exports sectors, emerged in the global economy with substantial industrial capacity, while a few other middle-income countries (for example, Malaysia and Thailand) have also begun to outperform the rest of the developing countries. If the present trends continue, these countries are expected to join the high-income group within the next two decades. In fact one of the most striking features of the global structural changes of the past two decades is the rapid rise of GDP and trade of the Newly Industrializing Economies in Asia relative to those of other developing regions and the high income OECD countries (Tables 2 and 3). The Asian NIEs raised their share of output, in the developing regions total, from 2.5 percent in 1965 to almost 12 percent (1.8 percent of world GDP) in 1986, while their share in manufactures exports by developing countries rose from 18 percent to 55 percent (8.5 percent of world manufactures exports) during the same period.

TABLE 1. Expansion of World Trade and Finance in Relation to Economic Activity, 1965-87 (percent)

		Ratio to World GDP a/		
		1965	1973	1987
		← percentage →		
International	Trade b/	11.9	13.9	18.0
	Manufactures	5.8	8.0	11.0
	Raw materials c/	2.0	1.6	1.3
International	Banking d/			
	Gross market size	1.5	6.2	29.4
	Net market size	0.9	3.7	17.0
Value added in world service sector		49.0	55.0	59.0
Memo item:		← metric ton per bil. dollar of real output →		
World Consumption (to GDP ratio) e/				
	Minerals and metals f/ (excluding iron)	4.0	3.0	2.8
	Iron-ore (metal content) g/	51.5	42.5	33.0
	Oil g/	287.0	345.0	236.5

Source: IECAP Division, International Economics Department; some of the calculations are based on World Bank, Price Prospects for Major Primary Commodities, Report No. 814/88, Nov. 1988; Morgan Guaranty Trust Company, World Financial Markets, various issues; and Ralph Bryant, International Financial Intermediation, Brookings, 1987.

a/ World GDP, excluding Soviet Union and Eastern Europe in current prices and dollar exchange rates.
b/ World Exports of goods and services, excluding Soviet Union and Eastern Europe.
c/ Excluding fuels.
d/ Morgan Guaranty series are used to estimate the size of the international bank credit. Net market size excludes interbank claims.
e/ Approximate measures. Metric tons per billion dollar of world real GDP (in 1980 prices and dollar exchange rates). Eastern Europe and USSR are not included.
f/ Apparent consumption of aluminum, copper, lead, nickel, tin and zinc.
g/ Apparent consumption (measured in metric tons).

TABLE 2. Structural Changes in World Production, 1965-1986

	GDP World Share a/			Ratio of Trade to Output b/		Structure of Production (Share in GDP) Agriculture		Industry		Services	
	1965	1980	1987	1965	1986	1965	1986	1965	1986	1965	1986
	←					percentage					→
Low and Middle Income Countries b/	20.2	23.2	17.9	13.5	19.0	30	18	31	36	38	46
Low income	8.9	5.7	5.0	10.5	12.0	42	33	28	35	30	32
Middle income	11.3	17.5	12.9	17.0	21.5	22	15	33	37	45	48
Highly indebted countries	6.6	8.6	5.5	13.5	15.0	20	15	34	37	46	48
Sub-Saharan Africa	1.5	1.9	0.8	22.5	18.0	45	36	19	25	36	38
Asian NIEs c/	0.5	1.0	1.8	38.0	62.5	25	10	28	40	46	50
High Income OECD Countries	79.4	77.2	80.1	13.0	22.0	5	3	40	35	55	62
Europe (Western)	29.3	--	32.9	21.0	31.5	--	--	--	--	--	--
Germany, Fed. Rep.	6.5	7.9	7.4	17.5	28.5	4	2	53	40	43	58
Japan	5.2	10.3	15.6	9.8	10.5	9	3	43	41	48	56
United States	40.1	26.1	29.7	4.7	10.5	3	2	38	31	59	67

Source: IECAP Division, International Economics Department, based on World Bank, World Development Indicators, 1989.

a/ Excluding Soviet Union, Eastern Europe, and the non-report member countries.
b/ For developing countries: ratio of the average of exports and imports of goods and non-factor services to GDP in current dollars. For industrial countries, the ratio is calculated as the average of exports and imports of goods and services (national income account basis) to GNP in current prices and local currency.
c/ Hong Kong, Korea, Singapore and Taiwan China; Hong Kong and Singapore are now considered High Income Countries..

TABLE 3. Structural Changes in World Trade in Manufactures, 1965-1986

	EXPORTS OF MANUFACTURES									
	Level a/		World Share b/		Share in Own GDP		Destination c/: OECD Countries		Share of Machinery and Transport Equipment in Exports d/	
	1965	1986	1965	1986	1965	1986	1965	1986	1965	1986
	← bil.$ →		← percentage →							
Low and Middle Income Countries	7.9	214.3	8.5	16.0	2.3	9.1	47	56	2	14
Low income	2.4	32.8	2.5	2.4	1.6	5.3	56	45	1	4
Middle income	5.1	180.6	5.7	13.2	2.7	10.4	45	60	3	16
Highly indebted countries	1.3	32.1	1.4	2.3	1.2	4.5	60	48	3	12
Sub-Saharan Africa	0.4	3.1	0.4	0.2	1.5	1.9	55	34	1	1
Asian NIEs e/	1.4	115.0	1.5	8.5	11.3	51.0	57	70	7	31
High Income OECD Countries	86.3	1151.1	91.5	84.3	6.3	11.0	67	74	32	42
Europe(Western)	57.7	721.3	61.2	52.8	11.5	19.1	73	79	35	40
Germany, Fed. Rep.	15.8	217.5	16.7	15.9	14.0	25.0	76	78	46	48
Japan	7.7	203.9	8.2	15.0	8.4	10.4	47	62	31	64
United States	17.8	162.8	19.0	11.9	2.5	3.9	58	63	37	48

Source: IECAP Division, International Economics Department, based on World Bank, World Development Indicators, 1989.

a/ Current US dollars.
b/ Excluding Soviet Union, Eastern Europe, High Income Oil Exporters and the non-reporting member countries.
c/ Percent of total manufactured exports destined for industrial countries' markets.
d/ Share in total merchandise exports.
e/ Hong Kong, Korea, Singapore and Taiwan (China); Hong Kong and Singapore are now considered High Income Countries.

Several important trends have affected all nations and have increased the degree of interdependence during the past two and a half decades. First, the ratio of trade to GDP has followed an upward trend in nearly all countries, with only brief interruptions during the recessions of 1975 and 1982. Second, the international financial markets have expanded very rapidly, outpacing the rise in international trade (Table 1). Between 1965 and 1987, the ratio of world exports to output rose by 6 percentage points, to 18 percent in 1987, while the ratio of international banking activity (as measured by net international bank credit) to output soared from 1 percent to 17 percent in the same period. Another example of the astonishing growth of the financial markets is the rapid rise in the size of international currency trading, which is directly related to the deregulation of financial markets, and to some extent, it appears to have been influenced by the massive current account imbalances of the major industrial countries in the 1980s. In 1989, for example, the combined average daily volume of trade in the foreign exchange markets of Japan, the United Kingdom and the United States reached $430 billion (nearly 6 times larger than in 1979), or about 50 times larger than the average daily transactions of internationally traded goods and commodities.

Third, both the direction and composition of international financial flows have undergone a profound change, especially since the early 1980s. Because of its massive trade surplus, Japan has become the largest supplier of international capital since the mid-1980s – a position which was held by the United States in the 1960s and 1970s. Moreover, there has been a dramatic decline in the role of commercial banks in channelling the capital flow as international investment in bonds and equities has surged during the 1980s. Net flows from private creditors to the developing countries, which amounted to about $50 billion in the early 1980s, came to a halt in the later part of the decade. In this context, a key structural shift has been the sharp rise in the ratio of external debt to GNP for the developing countries as a group. This ratio for public and publicly guaranteed debt rose from about 13.5 percent in 1970 to 27 percent in 1982 and 43 percent in 1987.

Fourth, in response to the changes in the structure of world demand and the emergence of new technologies and its impact on production processes, the role of raw materials in the global production and consumption has steadily declined. And, because, in part, of the protectionist policies of the industrial countries in the area of agricultural trade, the share of raw materials in international trade has decreased while that of manufactures has increased sharply (Table 1). Indeed, the share of agricultural products in total exports have fallen more than the share of agricultural value added in total output in most countries. By 1987, the real price of non-oil commodities (nominal price index of 33 commodities in dollars deflated by manufactures unit value

of exports of industrial countries) had fallen by nearly 50 percent, compared to its level in 1965. Partly as a result of terms of trade losses, the developing countries that failed to respond to these changes (that is, failed to diversify their production base and change the structure of their exports towards manufactures) have tended to suffer a steady deterioration in their living standard during the last two decades.

Fifth, in parallel to the emergence of the NIEs, there has been a continuing shift towards services in both production and trade within the industrial group, in the period 1965-86. And, simultaneously, the share of agriculture in total value added has steadily declined in nearly all countries. By 1986, in most of the high-income OECD countries the value added of the service sector accounted for sixty percent or more of GDP while the share of agricultural sector had fallen to less than 4 percent (see Table 2). This trend has also been reflected in the structure of civilian employment in nearly all industrial countries. For example, in the United States the share of services in total civilian employment rose from 56 percent in 1960 to nearly 70 percent in 1986, while the same share for agricultural employment fell from 9 percent to only 3 percent in the same period. Following a similar development path, the Asian NIEs also experienced a sharp fall in their share of agriculture in output, from 25 percent in 1965 to only 10 percent in 1986 – the lowest among the developing regions – while the share of services to total value added rose from 46 percent to 50 percent in the same period.

Sixth, a key feature of global structural change during the past two decades has been the rapid increase in the share of machinery and transport equipment and science-based products (for example, pharmaceuticals and electronics) in total world trade. This aspect of world trade has involved a broad range of products characterized by product differentiation and economies of scale. Again, this trend has been more pronounced in the OECD area and in the Asian NIEs than in any other region. Meanwhile, within-industry specialization has led to a sharp rise in intra-industry trade since the mid-1960s, particularly in the high income OECD countries. In these countries the share of intra-industry trade in total trade increased from 46 percent in 1965 to 60 percent by mid-1980s, while nearly three-quarters of the OECD area's science-based products are currently traded within the group.[3/] These latter trends have not only facilitated the transfer of the new technologies among the high income countries and thereby speeded up the process of convergence of productivity levels that results from trade and closer economic interaction with technologically more advanced countries, but also allowed them to benefit from the increased level of international competition in the intra-industry trade in manufactures.

3/ See OECD, *Structural Adjustment and Economic Performance*, 1987, Paris, Tables 7.3 and 7A.1.

Seventh, there is some evidence of an emerging trend toward greater concentration of trade flows within three major trading blocks: North America, the European Community and East Asia. Since the early 1980s, the volume of trade within each of these regions has risen much faster than the total world trade. Because of recent trade agreements within these trading blocks, it is expected that such developments will continue to gather strength in the future.[4/] To the extent that this development leads to enhanced competition and not to trade diversion due to protective measures against countries outside the block, it should also help increase productivity.

An important conclusion that may be drawn from the above trends is that structural changes of the past twenty years, particularly in the international trade area have, because of their role in bringing about a greater degree of economic efficiency, flexibility and dynamism, been beneficial to the high-income group and a select few of the middle-income countries. The trends relating to greater economic integration and deepening interdependence are likely to continue in the 1990s. Unless many low and middle income countries begin quickly to incorporate the necessary changes in their economic structures by means of major policy reforms in order to allow a more rapid integration into the international economy, the process of widening income gap between them and the higher-income group, which has emerged in the 1980s, will probably intensify in the decade ahead.

2.2 The Global Projections at a Glance

By definition, the long-term growth *potential* of an economy is equal to the sum of its labor productivity and employment growth rates, each measured over a period of several years. In turn, the key determinant of labor-productivity growth is technological change. Assuming that technological progress is embedded in the new investment goods, an acceleration in the rate of investment will have a positive effect on labor-productivity growth over and above that which would result from the increase in the capital-labor ratio.

Over the last 110 years, between 60 to 70 percent of output growth in the high income OECD countries can be explained by labor-productivity growth and the rest by employment (man-hours) growth, due largely to increasing female participation and population growth offsetting the shortening of work week. However, because of the expected continuation of the secular decline in working time per worker and

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4/ World Bank (IECAP), "The Developing Countries and the Short-term Outlook for the World Economy," July 1989.

demographic changes, which may lead to a lower rate of growth of labor force in most of the OECD countries in the 1990s, labor-productivity growth must accelerate in these countries in order for them to improve, and in some cases even maintain, their real potential economic growth during the next decade (see Table 4).

Indeed, in a number of industrial (that is, high-income OECD) countries, mainly as a result of a recovery in business profits and favorable real energy prices since the mid-1980s, investment ratios have begun to rise toward the levels reached in the period immediately preceding the severe recession of 1982-83. The new investments, which usually embody the latest technology, have already begun to have a positive impact on labor productivity, particularly in the manufacturing sector, in nearly all major industrial countries (see Chart 1). Although the impact is still fairly modest and mainly pro-cyclical in nature – 0.5 to 1 percentage point increase in the rate of growth of productivity in most industrial countries – it nevertheless represents an important change from the 1970s. In addition, there has been an acceleration in R&D spending in a number of industrial countries and the NIEs since the early 1980s, which should result in a further increase in the pace of technological change and its diffusion over the next decade.

Thus, barring major adverse shocks and given a mix of macroeconomic policies conducive to sustaining the current momentum of non-inflationary growth, the industrial countries may be expected to continue to experience some acceleration in their rates of growth of real per capita income in the 1990s (Table 4). Although there will be differences among them, most of the major industrial economies are projected to grow in the 1990s at near or even somewhat above their long-term trends, at any rate significantly above their averages in the early 1980s. In particular, the ongoing structural transformations and policy reforms in Europe and Japan will have a positive influence on the growth rates of their per capita income during the next decade. Nevertheless, there is potential for large adjustments in real exchange rates and for trade tension among the major industrial economies, mainly because the growth rates of productivity in the leading exporting and surplus countries, notably Germany and Japan, are expected to consistently exceed those of the other major industrial countries, particularly the United States, in the 1990s.

Of course, macroeconomic policies of the industrial countries might not be so favorable. Inflation might be allowed to accelerate; the existing trade imbalances among the major industrial countries might, if left uncorrected, lead to more protectionism; exchange rates might fluctuate widely; and real interest rates may remain high or even rise. Under combinations of such circumstances, international trade and investment would be adversely affected and economic growth would falter. The low-case scenario discussed in Section 5.3

TABLE 4. Long-term Trends and Projections of Economic Activity: 1870-2000 *

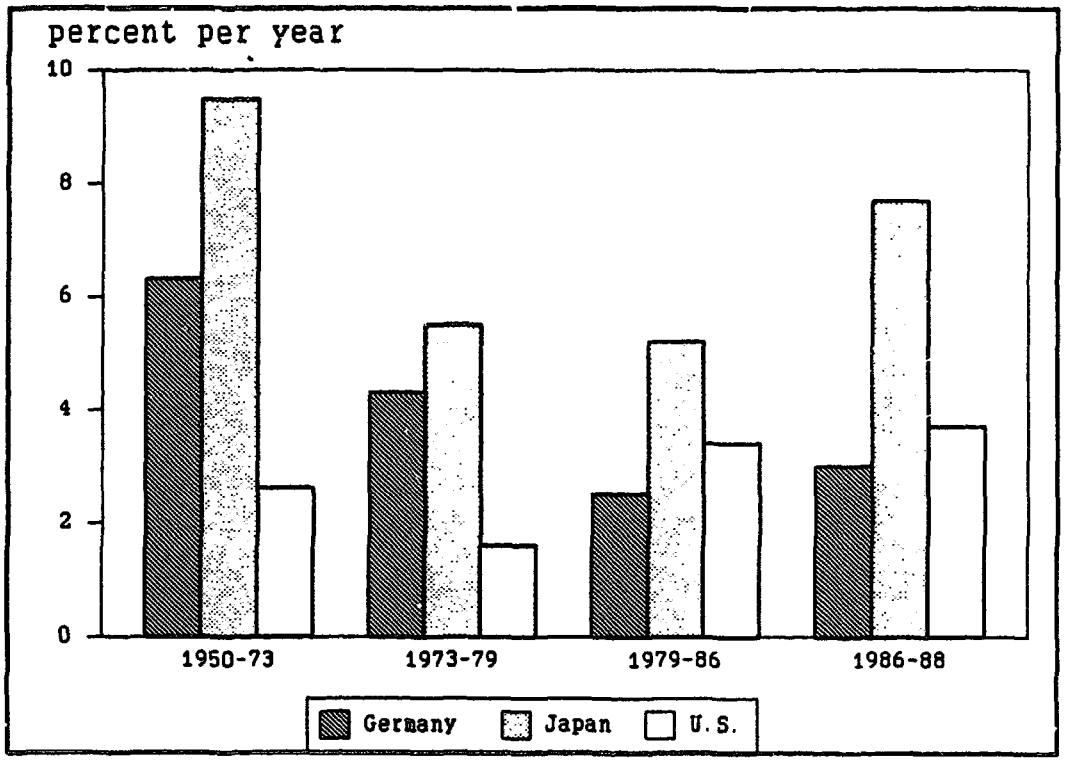
	Longer-term Trend		"Golden Age"	Recent Experience	Baseline Projections
	1870s to 1960s	1965-87	1960s	1980-88	1990s
Real GDP Growth					
Low and Middle Income Countries	1.5 a/	5.3 b/	6.3	4.2	5.0
o/w Newly Industrializing Economies (Asia)	2.0 c/	8.5	9.1	7.5	6.9
Sub-Saharan Africa	--	3.3	6.1	0.5	3.8
High Income OECD Countries	2.7 d/	3.3	5.2	2.7	3.0
Labor Productivity Growth					
High Income OECD Countries	1.9 d/	2.1	4.2	1.6	2.3
o/w Western Europe	1.7	2.6	4.4	1.7	2.3
Japan	2.2	4.6	10.0	2.8	3.0
United States	2.2	1.0	2.0	0.9	1.5
Real GDP per Capita Growth					
Low and Middle Income Countries	0.1 a/	3.0	3.8	2.1	3.1
o/w Newly Industrializing Economies (Asia)	0.2 c/	6.3	6.4	5.7	5.5
Sub-Saharan Africa	--	0.4	3.3	-2.6	0.7
High Income OECD Countries	1.5 d/	2.6	4.2	2.2	2.6
Population and Labor Force Growth					
Low and Middle Income Countries: Population	1.4 a/	2.2	2.5	2.0	1.8
o/w Newly Industrializing Economies (Asia)	--	2.1	2.6	1.7	1.3
Sub-Saharan Africa	--	2.9	2.6	3.2	3.1
High Income OECD Countries:					
Population	1.2 d/	0.9	1.0	0.6	0.4
Labor Force	--	1.0	1.1	0.9	0.5

Source: IECAP Division, International Economics Department; OECD, OECD Economic Outlook, various issues; A. Maddison, "Growth and Slowdown in advanced Capitalist Economies: Techniques of Quantitative Assessment," Journal of Economic Literature, June 1987, pp. 649-698; A. Maddison, Phases of Capitalist Development, Oxford, 1982; and ILO, Economically Active Population: 1950-2025, Geneva, 1986.

a/ Rough estimate for the period 1900-1960 based on various sources, including A. Maddison, The World Economy in the 20th Century, OECD, 1989.
b/ Data from 1965 onward is based on a sample of 90-countries, which excludes High Income Oil Exporters and the non-reporting member countries.
c/ Historical data for Exporters of Manufactures Asia are for the period 1900–1960 and includes only Korea and Taiwan, China. The Group is defined to include Korea, Malaysia, Taiwan (China), Thailand, and high income countries of Kong-Kong and Singapore.
d/ Includes France, Federal Republic of Germany, Japan, Netherlands, United Kingdom and United States.

* All averages are compound annual rates of change; used throughout this report unless noted otherwise.

Chart 1
Labor Productivity Growth in Manufacturing: Major Industrial Countries



Source: Bureau of Labor Statistics, U.S. Department of Labor

Chart 1. Data
Labor Productivity in Manufacturing*
(percent change per year)

	1950-73	1973-79	1979-86	1986-88
Japan	9.9	5.5	5.2	7.7
Germany	6.6	4.3	2.5	3.0
United States	2.6	1.4	3.3	3.4

* Output per hour in manufacturing sector.

approximates an environment where policies in industrial countries fail to take advantage of the major positive impulses and opportunities that are now present in the world economy, such as the economic reforms in Europe and Japan, liberalization of world trade, and rapid pace of technological change. The developing (that is, low- and middle- income) countries also stand to gain, or lose, depending on which road they take: toward major overhaul of their domestic economic policies that would result in the macroeconomic, structural, and institutional changes required for a sustainable non-inflationary growth in the 1990s, or failure to adapt policies and thus continue to suffer low growth – even in the face of a favorable global economic environment.

Yet, in several important respects the risks and opportunities faced by the developing countries are different from those faced by the industrial countries. For most developing countries new technologies must largely be imported and their access to these technologies depends on the availability of foreign exchange and external financing needed for the importation of the appropriate capital goods that embody these technologies. The realization of the opportunities depends crucially on further liberalization of international trade and removal of the existing protectionist measures in both industrial and developing countries. Moreover, although the comparative advantage of developing countries seems to remain in producing and exporting relatively labor-intensive products, they may have to move towards a relatively more capital-intensive strategy in the export sector and also invest more heavily in human capital, to take advantage of the economies of scale inherent in international trade. There is a need for further research in this area, but it should be noted that because of the specificities of the current technological progress and high investments there has been an improvement in the competitive position of some of the traditional industries (for example, textile) in the industrial countries vis-a-vis the developing countries in recent years.

In addition, the low- and middle-income countries face quite different a demographic situation than the high-income countries. In the 1990s, based on rough estimates, the average rate of growth of population and labor force in the developing countries is expected to be nearly four times that of the industrial countries, (2.0 percent per year vs. 0.5 percent per year). This means that the developing countries on an average must grow along a significantly higher growth path than the industrial countries (the average margin of difference in population growth rates is about 1.5 percentage points), just to maintain their relative position in terms of real per capita income with respect to the industrial countries. To achieve this higher growth path, the developing countries must raise the level of net investment and its efficiency (by putting more emphasis on training and skills and management quality both in the public and private sectors), in order to raise the rate of growth of labor

productivity. This growth rate has been declining in many cases in the 1980s. In addition, in some of the developing regions (notably Africa) where labor force growth is expected to accelerate in the 1990s, the investment ratios must be raised just to prevent the capital-labor ratio from declining further. Thus, demographic factors will continue to complicate the task of development in the foreseeable future. However, it is important to note that, on the basis of historical experience, if the per capita income levels in the low- and middle-income countries begin to rise again on a sustained basis, as the fertility rates decline significantly, the population growth rates may be expected to decelerate over the following two decades. The poorer countries would gain more than proportionately from such a trend.

The baseline projections for the low- and middle- income countries as a group indicate an average per capita growth of about 3 percent for the 1990s. Although this expected performance is better than that in the 1980s and is in line with the trend growth over the last two decades, it masks a serious divergence in growth rates among individual countries. Moreover, this projection is fraught with uncertainty. This uncertainty stems mainly from three highly interrelated areas: first, the level and cost of financial flows to the developing countries and the level of domestic savings that will have to be mobilized to finance the needed level of investment to achieve 2-3 percent per capita income growth in the 1990s; secondly, the degree of success of the individual countries in implementing policy reforms and making the appropriate structural and institutional changes in their economies to take advantage of the opportunities, and to hedge against the risks, that lie ahead; and thirdly, the strength of world trade and the degree of openness of industrial-country markets to developing-country exports. That there will be major external shocks can be taken for granted. Given the external debt problem currently faced by many developing countries, it is almost certain that they are *not* well prepared, either financially or politically, to cope with, in the 1990s, major external shocks analogous to the ones that occurred in the 1970s and early 1980s, such as the sharp rise in energy prices and international interest rates.

Table 5 shows some aggregate indicators of investment and its financing since 1973 and the short-term prospects for these indicators. As indicated in the table, for the industrial countries, as their ratio of aggregate gross domestic savings to GDP has fallen below their investment to output ratio, real interest rates have increased and remained high. The investment ratio for the middle-income countries has declined sharply from the high (and perhaps unsustainable) level attained around 1980 and could fall below the level expected to prevail in the industrial countries in the short run. In most instances, the continuation of poor economic performance and lack of confidence by both business and household sectors have inhibited investments. There are also important international factors behind this change: the shift in the external payments position of the

TABLE 5. Saving, Investment, and Transfer of Resources

	1973	1980	1985	1987	1988	Short-term Projections 1989
High Income OECD Countries	←			percent		→
Gross Domestic Savings (% of GDP)	25.9	22.2	20.6	19.3	19.7	20.5
Gross Domestic Investment (% of GDP)	25.4	23.0	20.6	20.1	20.5	21.0
CAB a/ (% of GDP)	0.5	-0.8	0.0	-0.8	-0.8	-0.5
GDP Growth (% change, moving average)*	4.0	2.2	3.6	3.5	3.8	3.7
Real Interest Rate b/	1.7	0.5	5.5	3.9	4.5	4.5
Middle Income Countries						
Gross Domestic Savings (% of GDP)	23.5	25.9	24.8	25.2	19.5 d/	--
Gross Domestic Investment (% of GDP)	23.4	27.3	22.1	23.0	21.0 d/	--
GDP Growth (% change, moving average)*	7.3	3.6	3.5	3.5	2.9	--
Net Transfer of Financial Resources on account of debt (ratio to GNP) c/	1.3	1.7	-1.8	-2.9	-2.6	--
CAB e/ (% of GNP)	-0.2	-4.7	-1.1	0.0	0.1	--

Source: IECAP Division, International Economics Department; OECD, OECD Economic Outlook, various issues; and World Bank, World Tables, 1987.

a/ Ratio of net exports of goods and services (national income account basis), including statistical discrepancy, to GDP.
b/ LIBOR (six-month dollar deposits) adjusted by rate of change in US GDP deflator.
c/ Ratio of net disbursements minus interest payments to GNP.
d/ Preliminary estimates, based on World Bank, Annual Report 1988, Table 2-4, p. 27.
e/ Balance on current account as a percent of GNP.

* Three year moving average, centered on the year shown.

industrial countries, from being a net exporter of capital to a net importer of capital, and the rise in real interest rates in the 1980s (Charts 2 and 2a). The main cause of the swing in the external payments position of the industrial countries is the massive current account deficit of the United States, brought about by the sharp expansion of its budget deficit during the 1980s. Since the mid-1980s, the United States has been absorbing about $150 billion of the world's savings per year and thus has been directly competing with the developing countries for capital to finance its budget deficit while fostering a rise in its private investment. A combination of a large fiscal deficit and a restrained monetary policy in the United States has kept real rates of interest relatively high, which in turn has helped attract the needed foreign capital.

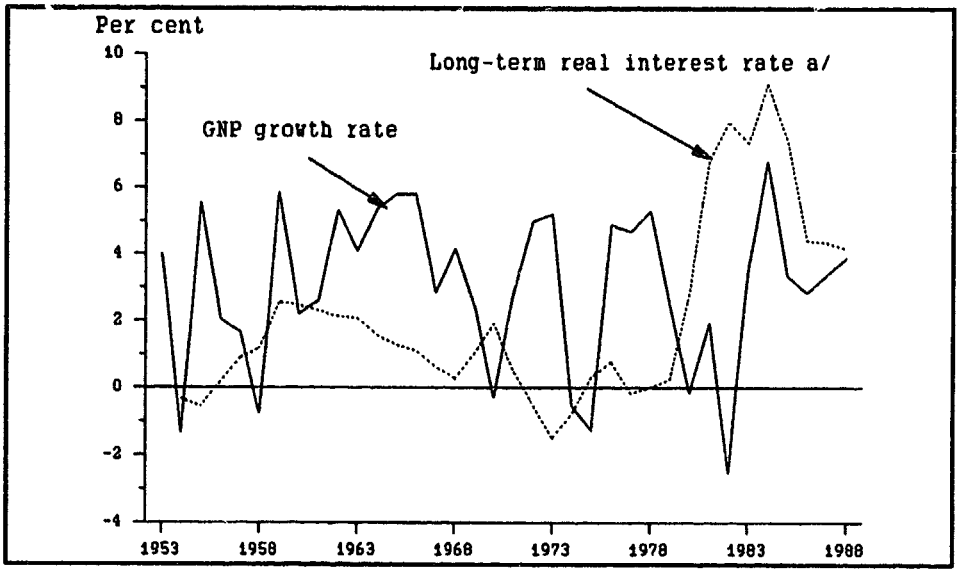
Since this process is likely to continue well into the 1990s, it is unlikely that a substantially higher level of foreign capital or lower real rates of interest than in the 1980s will be available to the developing countries before the mid-1990s[5/] (see Sections 3.1 and 5.2 below for further discussion of these issues).

The decline in the level of external lending and the rise in interest rates have brought about a substantial swing in the net transfer of financial resources (on account of debt) to the middle-income countries, from an inflow of more than $21 billion in 1980 (1.7 percent of their combined GNP), to an outflow of more than $45 billion in 1988 (2.6 percent of GNP). The large negative transfer of resources is expected to continue in the period 1989-90, thus leading to a further decline in the middle-income countries' investment ratio, unless the level of domestic saving is raised substantially. (These calculations, however, make *no* specific allowance for the possible effects of the new initiatives toward debt relief, which are discussed in Section 5.4.) For most countries, this implies that fiscal deficits must be reduced substantially, and higher private savings encouraged to finance investment projects.

Rough estimates for inverse-ICOR, or "investment efficiency," indicate that over the last decade or so the efficiency of investment in the middle-income countries as a group has fallen steadily and the average for the 1980s has fallen below the OECD average (see Table 5a). A significant rise in investment efficiency in the developing countries may not be possible without the replacement of a sizable portion of the existing stock of capital with a newer and more productive vintage and a more efficient usage of both old and new machinery. This task, however, would entail a substantial increase in imports of capital equipment and heavy investment in human capital in order to upgrade the quality of labor and management.

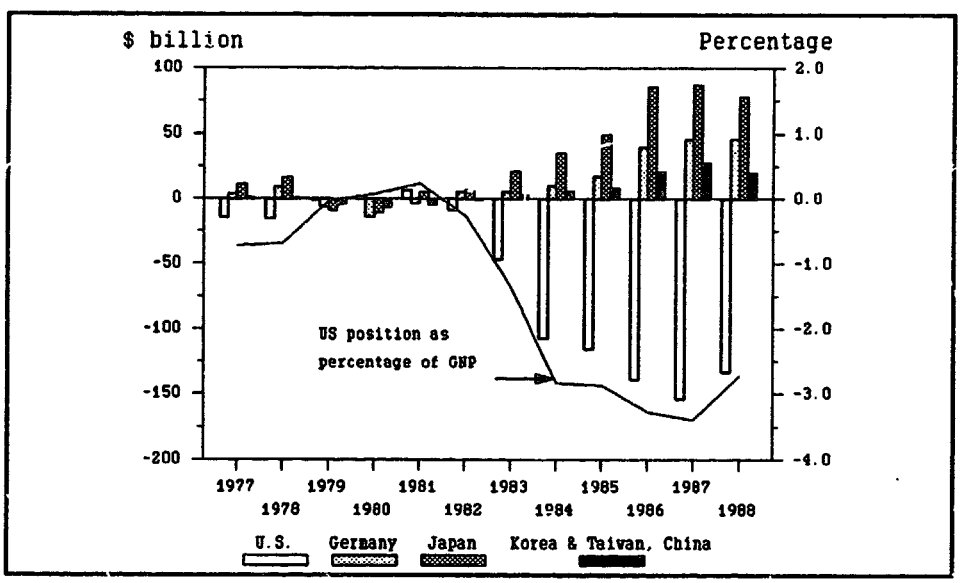
5/ A major reduction in military spending, as a dividend of the recent *rapprochement* between the United States and the USSR could result in a significant decline in the level of the fiscal deficit in the former. But its effect on developing countries, aside from a possible decline in real long-term interest rates, may be ambiguous, given the possibility of higher demand for external financing of domestic investment in Eastern Europe and the USSR in the next 5 to 10 years.

Chart 2
Real GNP Growth and Real Long-Term Interest Rate in the United States



[a]Long-term government bond yield deflated by a three-year moving average of inflation
Source: IEC.

Chart 2a
Current Account Positions of Major Industrial Countries and NIEs
(billions of U.S. dollars)



Source: IMF.

TABLE 5a: Some Measures of Investment Efficiency: Estimates of Economy-wide Inverse-ICOR a/, 1965-88

	1965-73	1973-80	1980-88
All Low and Middle Income Countries	0.28	0.20	0.16
Net rate of return b/	0.48	0.29	0.24
Middle Income Countries	0.28	0.20	0.12
Net rate of return b/	0.46	0.29	0.20
Low Income Countries	0.28	0.18	0.20
Net rate of return b/	0.53	0.28	0.28
High Income OECD Countries	0.19	0.10	0.13
Net rate of return b/	0.29	0.17	0.21
Memo item:			
Net rate of return			
High performers c/	0.27	0.19	0.23
Low performers d/	0.30	0.21	0.08

Source: IECAP Division, International Economics Department; calculated from OECD, OECD National Income Accounts, various issues.

a/ Inverse of incremental capital-output ratio.
b/ Inverse-ICOR corrected for depreciation of capital, which is assumed to be 10 percent.
c/ 13 developing countries that performed well in the 1980s (see Table 6 and Chart 8).
d/ 8 developing countries that did not perform well in the 1980s (see Table 6 and Chart 8).

TABLE 5b: Determinants of Long-term Growth of Per Capita Income a/

	All Developing Countries b/		Low Performers c/	
Explanatory Variable	1970-88	1980-88	1970-88	1980-88
Population Growth	-0.490 (-3.0)	-0.594 (-2.9)	-0.042 (-0.2) *	-0.182 (-0.8)
Investment Effort d/	0.105 (5.2)	0.112 (4.3)	0.075 (2.5)	0.079 (1.4) *
Export Growth e/	0.309 (10.8)	0.241 (7.9)	0.295 (8.1)	0.192 (4.7)
External Debt Burden f/	-0.020 (-3.4)	-0.004 (-0.8) *	-0.021 (-2.7)	-0.006 (-0.8) *
Equation R^2 (Adjusted)	0.76	0.60	0.65	0.39

Source: IECAP Division, International Economics Department.

a/ Cross-section regression, using average growth rates in the periods specified as observations. Figures in parenthesis are t-statistic, and all are significant except those with an asterisk.
b/ A sample of 87 low and middle income developing countries.
c/ 48 countries that did not perform well in the 1980s (see Table 6).
d/ Average ratio of real gross domestic investment to GDP.
e/ Average rate of growth of volume of exports.
f/ Average ratio of stock of external debt to GDP.

Investment efficiency within the developing country group is far from uniform. As indicated in Table 4, there is a wide divergence in economic performance between the major exporters of manufactures and the rest of the developing regions. While the average income growth and the associated level of investment efficiency (measured by inverse-ICOR) for the Asian NIEs remained more or less stable in the 1980s as compared with the 1970s, those for Latin America fell by two-thirds in the same period. Moreover, in the 1980s the ratio of investment to GDP has remained stable at about 30 percent in the Asian NIEs, while it has fallen sharply to between 15 percent and 17 percent in the heavily indebted countries and non-oil commodity exporters. The net transfer of financial resources away from the last two country groups to the creditor countries, continued capital flight, and the failure of domestic savings levels to rise sufficiently seem to be the most significant factors in explaining the collapse of the investment ratios.[9/] In a large number of countries, the sharp decline in the investment ratios (in both public and private sectors) have hurt their export capacity. Although world trade was strong in the period 1986-88, for many countries their external trade linkages and the internal dynamics of their trade sector proved to be insufficient to generate a faster pace of economic growth. For many of these countries the financial linkages have tended to have counter-cyclical effects (for example, simultaneously facing higher output growth and higher real interest rates in the OECD area) and thus have had a dampening effect on these countries' growth performance. Only a few developing countries have been able to take full advantage of the recent resurgence of world trade.

Moreover, the preliminary statistical results shown in Table 5b indicate that both investment effort and export drive have had a significant positive impact on the per capita income growth of developing countries, while high population growth has become an increasingly important factor in impeding the growth of per capita income in the 1980s. The regression estimates also indicate that countries with a higher level of external debt burden on average have a lower long-term growth of per capita income, even after taking account of the effects of other variables such as investment effort and export growth. In this context, the debt burden variable not only tends to capture the effect of the implied financial outflows, which tend to dampen growth, but also serves as an indicator of the extent of domestic policy failure in raising domestic savings and lowering fiscal deficits.

Charts 3-5 delineate the historical trends in real per capita income of different regions and country groupings relative to that of the U.S, using 1980 prices and exchange rates. These Charts exhibit the two entirely

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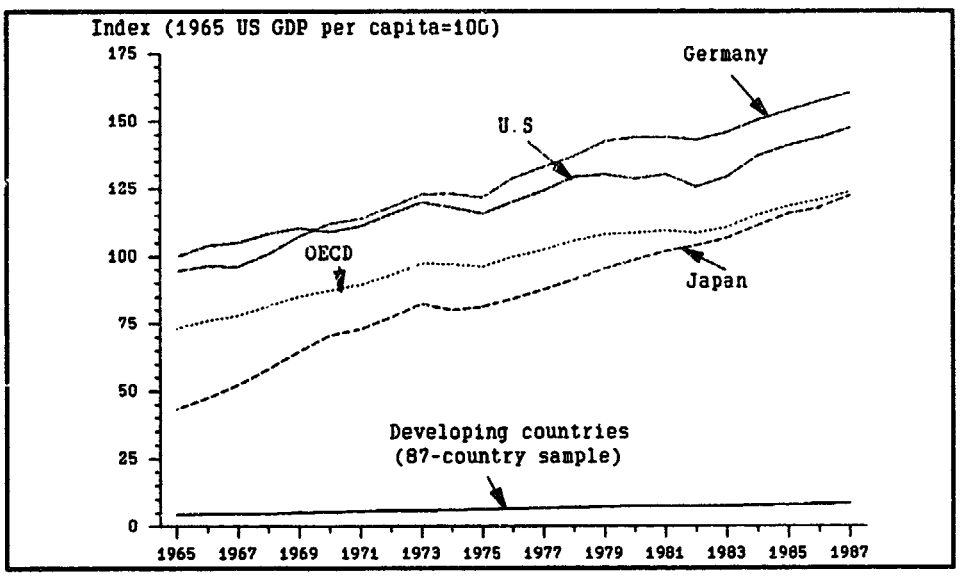
9/ See Robert Lynn and F. Desmond McCarthy, "Recent Economic Performance of Developing Countries," World Bank, PPR Working Paper No. 228, July 1989.

different growth paths within the developing country group since the later part of the 1970s.[7/] The continuation of these trends into the 1990s, which would imply further relative decline in the standard of living of Africa and Latin America, is particularly alarming.

Chart 3: Relative GDP Per Capita: High Income and Developing Countries (1965-87)

(constant 1980 prices; 1965 U.S. GDP per person = 100)



Source: OECD and IEC.

2.3 Two Development Tracks?

Economic performance has always varied greatly across countries. Indeed wide differences in the rate of growth of productivity and, therefore, in economic growth is one of the "stylized facts" that a growth model should explain.[8/] However, as already discussed, what has become a disturbing and puzzling feature of the developing countries' economic performance in the 1980s is the emergence of two groups which not only have radically different performance records but also differ in their capacities to respond to changes in international economic

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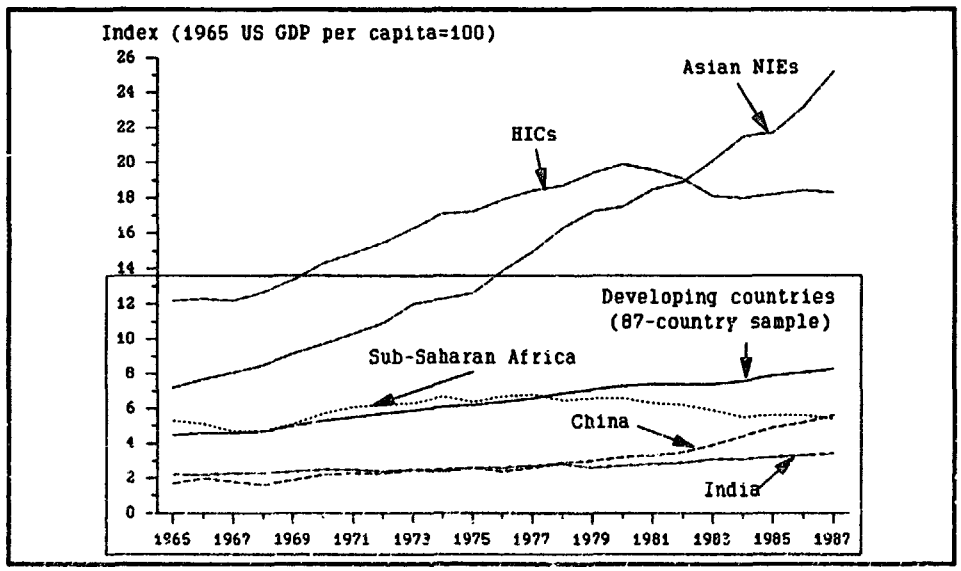
7/ For counterparts to Charts 3 and 4, which use the intercountry comparisons presented in the Penn World Table (Mark4), see Annex C, Charts C1 and C2. The PWT presents real GDP per capita figures adjusted for purchasing-power parity, and these figures, in general, differ from real GDP per capita data based on offical exchange rate conversions. While the relative positions and the extent of difference are somewhat different in the charts based on the PWT, the long-term trends are similar in both sets of charts.

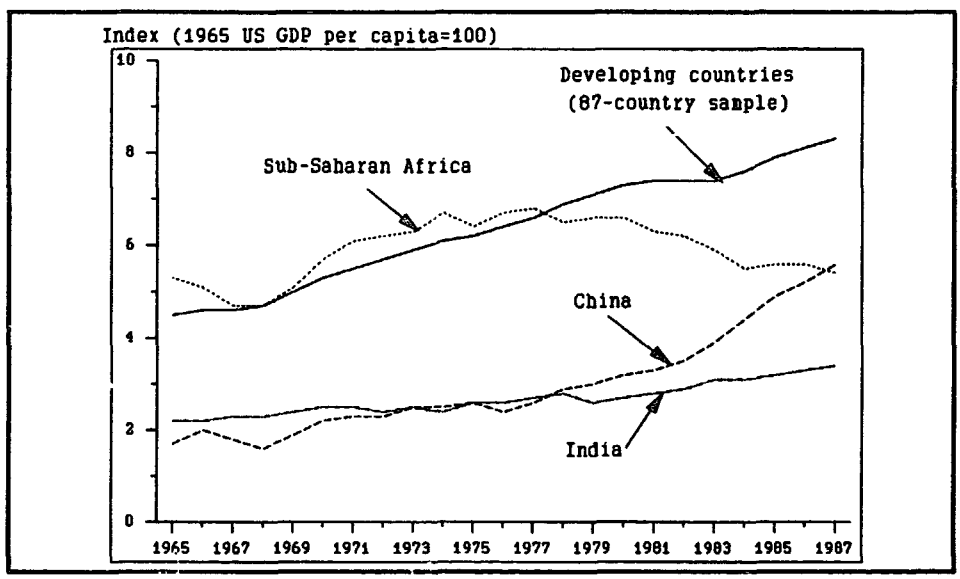
8/ For an example of a list of "stylized facts" see N. Kaldor, "Capital Accumulation and Economic Growth," in F. Lutz and D. Hague (ed.), The Theory of Capital, St. Martin, 1961.

Chart 4: Relative GDP Per Capita: Developing Countries (1965-87)
(constant 1980 prices; 1965 US GDP per person = 100)



Source: IEC.

Chart 5: Relative GDP Per Capita: Focus on Sub-Saharan Africa, China and India
(constant 1980 prices; 1965 US GDP per person = 100)



Source: IEC.

environment.[9/] On the surface, these two country groups seem to have had a fairly similar growth performance in the 1960s and 1970s. In fact, the causes of the divergence are quite deep-seated. As early as the 1970s, the performance of the two groups in terms of per capita income growth began to differ. The growing divergence, however, was "covered up" by the high borrowing strategy of the "low performers" which was not sustainable, and led to the crisis at the end of the 1970s and early 1980s.

From the data presented in Table 6 (and Charts 6 and 7), it is clear that while the growth (and investment performance) of the two groups were more or less similar prior to the 1980s, the "low-performing" group was adversely affected in the 1980s.[10/] The main characteristics of this group are (see Annex A for a more detailed statistical evidence): relatively low ratio of export to GDP; low rates of investment in the 1980s; relatively high dependence on external borrowing in the 1970s and the early 1980s; relatively small manufacturing base; high rates of inflation; and fairly small population size but high rate of population growth. But most of these characteristics are closely related to the domestic policies followed by these countries in the 1960s and 1970s, such as import substitution and heavy reliance on external borrowing to finance investment projects, which in many instances proved to be costly and inefficient. Given their structural weaknesses these low performers were hit hard by the adverse international economic conditions in the first half of the 1980s and, more importantly, they were unable to respond to the opportunities offered by the relatively rapid growth in world trade and in economic activity of the OECD countries in the second half of the decade.

On the other hand, for the "high-performers" group – which includes all of the Asian NIEs (see Chart 8) and close to half the population of the low- and middle- income countries – the investment to output ratios have continued to rise, providing these countries a higher supply capacity to respond to foreign demand quickly without facing inflationary pressures. For most of these countries the contribution of investment to GDP growth has risen substantially in the recent years. In the period 1986-88, nearly one-half of the GDP growth in the Asian NIEs was attributable to the rise in investment demand, compared with almost no contribution from investment to GDP growth in Latin America and Sub-Saharan Africa as groups.

As argued below, investment performance and the degree of outward-orientation of economy can go a long way in explaining the apparent "de-coupling" between the economies of the low performers and those of the high income countries in the 1980s and, possibly even in the 1990s. Indeed, even in the face of a faster

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9/ Shahrokh Fardoust and Ashok Dhareshwar, "An Empirical Enquiry into Some Aspects of the Two Development Tracks Hypothesis," IECAP, World Bank, August 1989 (processed).

10/ For a counterpart to Chart 6, which uses the intercountry comparisons presented in Penn World Tables (Mark 4), see Annex C, Chart C3. Also, see footnote 7 above.

TABLE 6. Widening Disparities of Growth *
(annual average percentage change)

	1965-73	1973-80	1980-88	1987-88	Short-Term Projections 1989-90
GDP Growth					
All Low and Middle Income a/	6.0	5.1	4.0	5.1	3.9
High Performers b/	6.2	5.4	7.6	9.4	5.9
Low Performers c/	5.8	4.8	1.3	1.8	2.0
GDP Growth Per Capita					
All Low and Middle Income	3.4	3.0	2.0	3.1	1.9
High Performers	3.7	3.5	6.0	7.7	4.0
Low Performers	3.2	2.3	-1.3	-0.8	-0.6
Investment to GDP Ratios					
All Low and Middle Income	21.1	25.9	24.9	25.3	24.9
High Performers	22.2	27.6	32.0	34.0	32.8
Low Performers	19.1	22.9	16.6	14.5	14.9

Source: IECAP Division, International Economics Department; See Annex A.

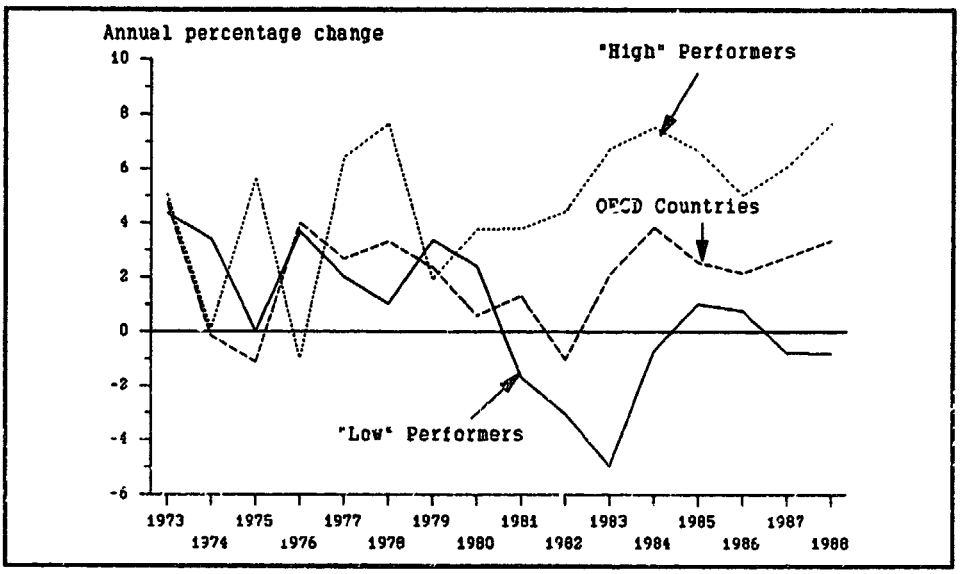
a/ A sample of 87 low and middle income countries.

b/ 13 countries that performed well in the 1980s; they had favorable growth performance (per capita income growth of 2 per cent or more per year) and had above-average investment ratios in 1980-88. In 1987, these countries had a combined population of 2064 million and an aggregate real GDP of more than $1129 billion (in 1980 dollars).

c/ 48 countries that did not perform well in the 1980s; they had unfavorable growth (per capita income growth of less than 2 percent per year) and had below average investment ratios in 1980-88. In 1987, these countries had a combined population of 1005 million and an aggregate real GDP of $1087 billion (in 1980 dollars).

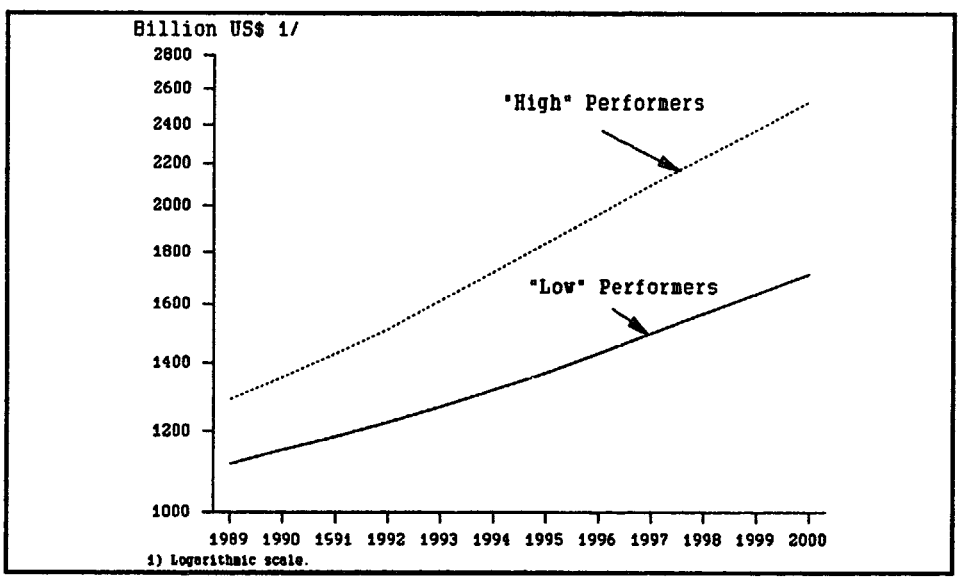
* All average growth rates are compound annual rates of change calculated using the beginning and ending years of the indicated interval.

Chart 6
Per Capita GDP Growth of High- and Low-Performers Among the Developing Countries



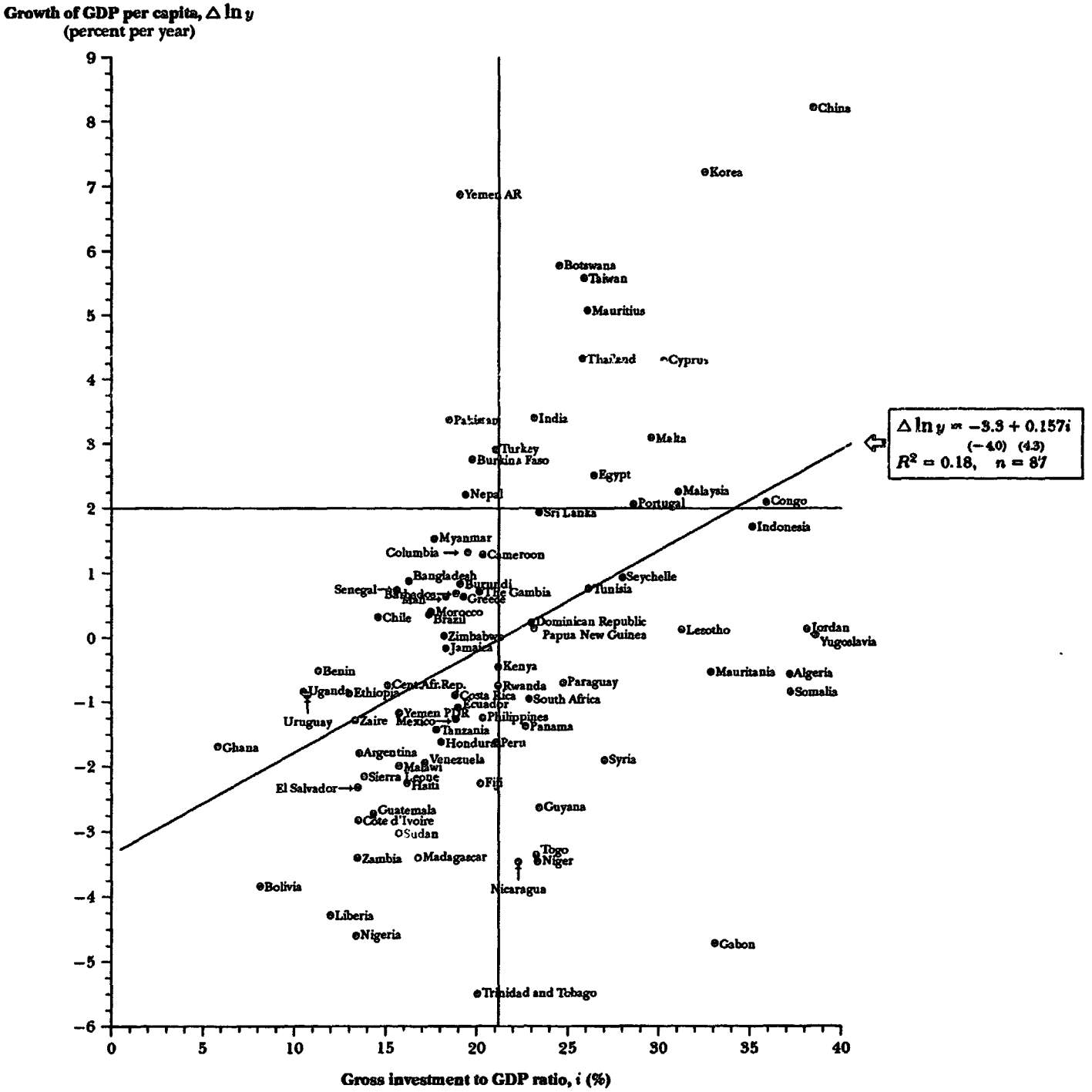
Note: "High" Performers: sample of 13 developing countries; "Low" Performers: sample of 48 developing countries. See footnote to Table 6.
Source: IEC.

Chart 7
Projected Aggregate GDP Levels of High- and Low-Performers Among the Developing Countries



Note: "High" Performers: sample of 13 developing countries; "Low" Performers: sample of 48 developing countries. See footnote to Table 6.
Source: IEC.

Chart 8
Growth and Investment Performance of Low- and Middle-Income Countries, 1980–1988



Note:

(a) The line parallel to the x-axis represents the long-run average growth rate of per capita income in the industrial countries, which is roughly 2.0 percent per year. The line parallel to the y-axis drawn at 21.2 percent stands for the unweighted average of the investment-to-output ratios for the developing countries in the 1980s.

(b) The country associated with a data point is given at the right of the bullet, except where indicated otherwise by an arrow.

Source: IEC.

pace of economic activity in the industrial countries, the low performers *may not* necessarily improve their economic performance. A cumulative history of low and inefficient investment, which may be a good proxy for poor domestic policies, a low level of productive capacity and a lack of the necessary manufacturing base, particularly in the export sector, may not allow a significant rise in exports of these countries without c ating inflationary pressures or a significant drop in the level of private consumption.

Moreover, statistical estimates suggest that the root of some of the major problems that the low performers are facing today may date back to their investment efforts and the domestic policies that they followed in the 1960s and 1970s. Estimates in Table 5a show that while efficiency of investment for the high performers seem to have risen in the 1980s, that for the low performers has continued its steady decline since the 1970s. Furthermore, as indicated in Table 5b, the effect of a one percentage point increase in the investment to output ratio on growth of GDP per capita is estimated to be nearly 30 percent smaller for the low performers than for the developing countries as a group.

Another aspect of these diverging growth paths is the apparent clustering of the low performers around a substantially lower average growth rate than that of the developing countries as a group. For the period of 1980-88, the average annual (unweighted) rate of growth of real GDP for the low performers was about 1.4 percent (with a sharply declining standard deviation of growth rates), compared with 6.0 percent for the high performers. This may indicate that the overall distribution of growth rates of developing countries has tended toward a bi-modal distribution, with a large number of countries clustering around a very low mean (Charts 9 and 10).

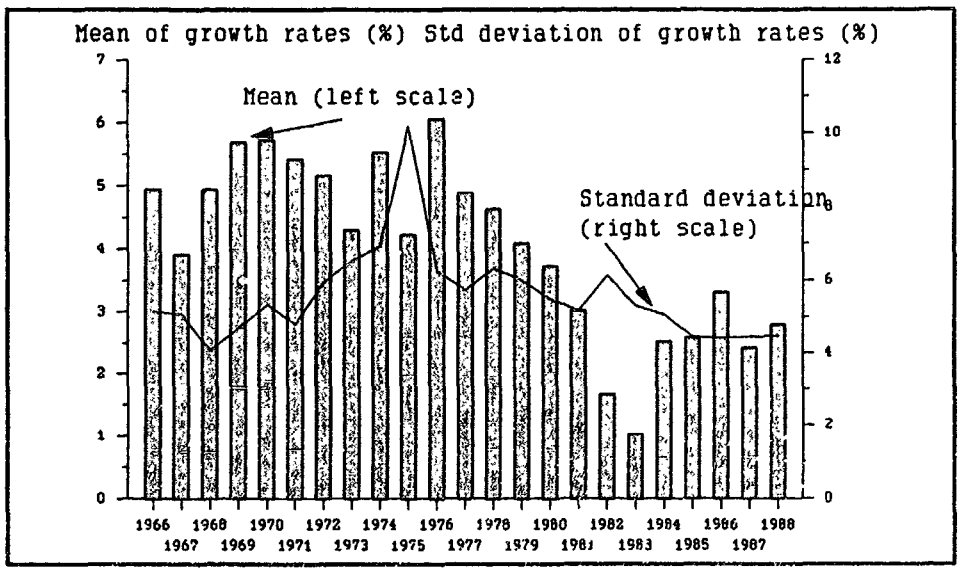
A positive effect of rapid and sustained growth on alleviation of poverty can be established. Therefore, projecting "two development tracks" into the 1990s and beyond has important implications for the extent and distribution of poverty in the developing regions. Given that most of the so called "high performers" are Asian countries, including China and India, any projection of growth trends that does not assume radical changes in domestic policies in the "low performers" would suggest that the global "center of poverty" would gradually shift away from Asia into the other developing regions, particularly Africa, during the coming decades.

As indicated in Chart 8, different groups of developing countries face quite different problems as regards the growth and investment issue. Obviously, there are a large number of countries with a low growth of per capita income which have also been experiencing low investment ratios in the 1980s (that is, the "low performers"). For many of these countries the ratio of *net* investment to output may in fact be close to zero, or even negative in some cases. For this group of countries, which contains many African and Latin American

countries, the level of investment appears to be the main bottleneck. However, there is another relatively large group made up of countries with high investment to output ratio but low per capita income growth. The main problem of these countries may not be the level of investment but its efficiency and sectoral distribution.

The picture could change significantly in the 1990s. Many of the low and middle income developing countries are currently undergoing major policy reforms and structural adjustments which could result in a marked increase in the efficiency of their investments and a higher income growth.

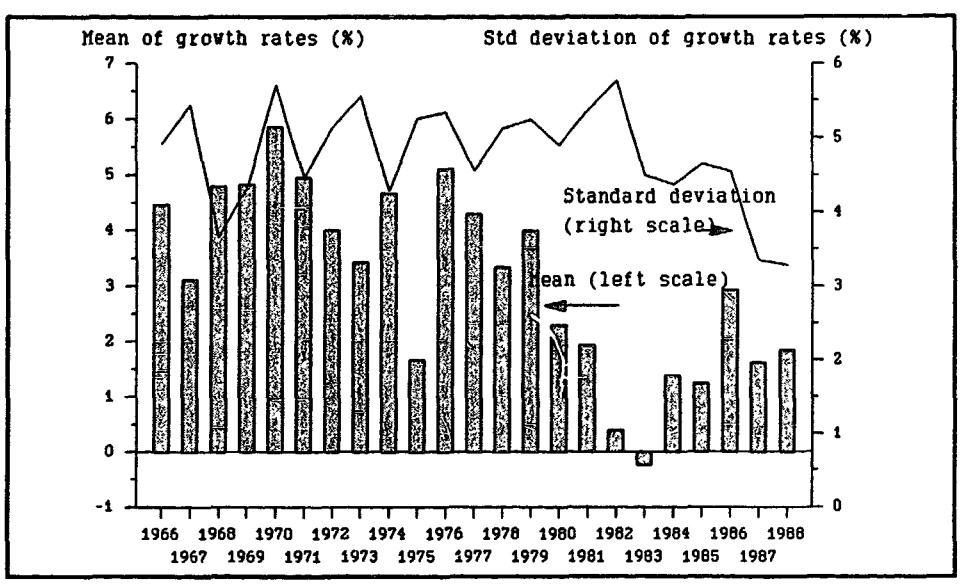
Chart 9
GDP Growth[a] of Low and Middle Income Countries, and Its Dispersion[b]



[a]Based on GDP growth rates of individual countries for each year.
[b]87-country sample.

Source: IEC.

Chart 10
GDP Growth[a] of Low-Performing Developing Countries, and Its Dispersion[b]



[a]Based on GDP growth rates of individual countries for each year.
[b]Sample of 48 countries. See footnote to Table 6.

Source: IEC.

3. ISSUES: OPPORTUNITIES AND RISKS FACING THE GLOBAL ECONOMY IN THE NEXT DECADE

There are several distinct but interrelated underlying currents in the international economy, which will to a large extent influence the growth prospects in both the developing and industrial economies in the 1990s. Some of these factors are of a shorter-term nature, and thus should mainly affect the initial conditions of the world economy in the 1990s, while others are of a longer-term nature and will be influencing the growth-path of the world economy over the entire decade and beyond. Seven major "currents" are covered here: adjustment and balance of payments disequilibria among the major industrial countries; deregulation of markets; financial conditions in the 1990s; emerging changes in international trade, and the trade effects of the ongoing changes and economic reforms in the socialist economies; rapid pace of technological change; demographic factors; environmental issues; and availability of material resources. Each of these currents implies both risks and opportunities for the developing countries in the 1990s. Aside from highlighting the major expected economic developments in the 1990s, an attempt is made to interrelate them and draw policy conclusion for the developing countries.

3.1 Adjustment and Disequilibria in Industrial Countries

An important part of the ongoing *economic adjustment* in the industrial countries, which is expected to drag into the 1990s, is in response to the massive buildup of balance of payments disequilibria among the major industrial countries and their attempts at market deregulation in the 1980s. In 1988, the current account deficit of the United States amounted to $130 billion – which was nearly equal to the combined surplus of Germany and Japan – and was financed with massive inflow of private capital ($100 billion) into the United States. Although these imbalances have declined somewhat from their peak, both in level and as a percent of GDP, the correction process has been slow and the absolute levels still remain quite large by historical standards (Table 7).

Between 1981 and 1987, the U.S. current balance swung from a surplus of $7 billion to an unprecedented deficit of about $155 billion, a deterioration of $162 billion. Most researchers have identified the macroeconomic policy mix of the United States during this period as the fundamental cause of the emergence of such a massive external imbalance. A combination of relatively tight monetary policy and very expansionary fiscal policy during most of the decade of the 1980s resulted in high real interest rates, a sharply appreciating currency (mainly in the period 1981-85) and a very precipitous rise in the level of imports. The strong dollar, the collapse of imports of the heavily indebted developing countries from the United States, and relatively slow

growth in domestic demand in the other industrial countries were the key factors that inhibited the growth of the U.S. exports during the same period. Consequently, between 1981 to 1986, the U.S. merchandise export volume rose by less than 2 percent while its imports increased by more than 40 percent. The expansionary fiscal policy resulted in a sharp widening of the U.S. federal budget deficit during the first half of the 1980s. This deficit, as a percentage of GNP, rose from 2.4 percent in 1981 to 5.3 percent in 1985, before gradually declining to 3.4 percent in 1988.

However, besides the sharp rise in government deficit, there has been another key factor behind the massive current account deficit of the United States: a substantial change in the U.S. private saving-investment balance, as the U.S. private savings rate has gradually declined in the recent years. The private sector's net savings ratio has steadily declined from about 10.5 percent in the mid-1970s to only 6.4 percent in 1987. Although the same ratios have also come down in some of the other major industrial countries, they generally remain substantially higher than that of the United States. For example, in Japan the net private saving ratio has declined from about 20.1 percent in the 1970s to 14.4 percent in 1987, while in Germany the same ratio has actually increased marginally from about 11.0 percent to 11.6 percent in the same period.

However, despite the decline in the saving rate, the private investment rate in the United States has remained more or less stable. Gross domestic private investment to GNP ratio, which averaged around 17.0 percent in the 1970s has declined only marginally, averaging about 16.5 percent in the 1980s (with the ratio of net private investment to GNP declining from 8 percent to 6 percent between the 1970s and mid-1980s before rising to about 9 percent in 1988). Therefore, the gap between private saving and investment in the United States began to increase at about the same time that the U.S. government began to increase its dissaving. As a result, the total domestic saving and investment balance has deteriorated sharply since the mid-1980s, amounting to a deficit (excess of investment over saving) of about $150 billion in 1987 and somewhat less in 1988.

The counterpart of this growing internal imbalance has been the sharp rise in the level of net foreign investment in the United States, which amounted to $160 billion in 1987 and around $136 billion in 1988. Since foreign funds are fungible, it is not clear if the massive inflow of capital into the United States has primarily financed the budget deficit or domestic private investment. What is clear, however, is that these capital inflows have allowed the United States to maintain a very large fiscal deficit without sacrificing private investment.

One of the critical macroeconomic questions concerning the outlook in the 1990s is the sustainability of the massive internal and external imbalances of the United States and their financing. The liberalization of

capital movements in the industrial countries and the system of floating exchange rates have thus far allowed a smooth financing of the U.S. current account deficit. With the exception of 1987, when massive amounts of foreign official reserve (about $100 billion) – in the form of intervention in currency markets in support of the dollar – were used, the U.S. current account has been financed with foreign private capital. As a result, the estimated net international investment position of the United States has turned around from a creditor position of $106 billion in 1980 to a debtor position of about $500 billion in 1988. This negative net debt position could amount to $1 trillion by early 1990s.

Given the size and dynamism of its economy and the key role of the dollar in the world economy, the United States can continue to have a relatively large current account deficit for a while longer, without encountering "creditworthiness" problems. By the end of 1988, the net external debt of the United States amounted to about 11 percent of its nominal GNP. By comparison, the net debt of the highly indebted countries, such as Argentina and Brazil, amounted to about 25 percent of their GNP.[11/] However, the high dependence of the United States on foreign funds to finance its domestic investment could pose some potential risks to the world economy in the 1990s. Since nearly two-thirds of the net domestic investment in the United States in the period 1985-88 was financed by imported capital, the prospects for its long-term growth have become highly dependent on foreign investors' decision to accumulate and hold increasing proportion of their portfolios in dollar-denominated assets. Recent analysis shows that although the share of the U.S. assets as a percentage of financial assets of the private sector in the industrial countries has risen significantly since 1982, the absolute level of the share is still modest, at about 3 percent.[12/]

In Germany and Japan, the two largest surplus countries and suppliers of capital to the United States, gross domestic saving has remained well in excess of gross domestic investment throughout the 1980s. Therefore, given their excess savings and the deregulation of their capital markets in the last few years, the private investors in Germany and Japan could continue to finance the current account deficit of the United States without much difficulty for the next few years.

11/ The "net external debt" of the U.S. referred to here is in fact the negative of the U.S. net international investment position. The "net" external debt in the developing countries is their gross debt minus international assets held abroad (see D.H. Howard, "The United States as a Heavily Indebted Country," International Finance Discussion Papers, No. 353, May 1989).

12/ Michael Dealtry and Jozef Van't dack, "The U.S. External Deficit and Associated Shifts in International Portfolios," BIS Economic Papers, No. 25, September 1989.

However, as the U.S. external debt builds up and the fiscal policy debate (that is, Congressional debates about Gramm-Rudman-Hollings deficit targets) continues without a resolution, the financial risks worldwide become larger. There are several possible adjustment paths: (a) the "soft landing" scenario: some cyclical slowdown in the U.S. economic activity, gradual depreciation of the dollar, gradual but steady reduction in the budget deficit through some spending cuts, collaboration of the G-7 central banks to ensure the stability of global financial markets, growth remaining stable in Europe and Japan, and continuation of smooth financing of the U.S. current account deficit, which will decline slowly by the end of the 1990s; (b) the "hard landing" scenario: the U.S. policy debate reaches a deadlock on the fiscal deficit, foreign investors decide they do not wish to further accumulate dollar-denominated assets, the dollar depreciates sharply against other key currencies, the U.S. interest rates rise precipitously, the U.S. economy goes into a recession, and the external deficit gets corrected via a sharp decline in the U.S. imports; and (c) "adjustment with growth scenario" (baseline): the United States takes appropriate and decisive policy action to reduce the budget deficit by moderately increasing taxes and cutting military expenditures, economic activity slows down initially, real interest rates decline and remain relatively low, growth in domestic demand strengthens in Europe and Japan, and foreign investors continue to finance the current account deficit of the United States which will decline significantly while the dollar remains fairly stable.

Given the course and nature of the policy debate in the United States during 1989, and the financial volatility of October 1987 and October 1989, all three of the scenarios above appear to be roughly equally likely. Obviously, this could change in the next couple of years. Meanwhile, private investors worldwide fear scenario (b) but hope for scenario (a) or (c). (The impact of these scenarios on the rest of the world are discussed in Section 5.)

In sum, it is very likely that the economic events in the next few years, including those induced by policy change, will be shaped by the impact of the current account imbalances of the three largest industrial economies on international interest rates, on key exchange rates, on prices of assets and commodities, and on trade and financial flows. Both the speed with which these disequilibria unwind and the manner in which the massive current account deficit of the United States is financed, will influence the medium-term prospects for economic growth and inflation in the industrial countries. These factors, in turn, will affect trade volume, terms of trade, and cost of borrowing for the developing countries. In addition, the geographical allocation of the massive payments surpluses of Germany and Japan will, to a large extent, determine the level of financial flows,

including direct investment, to the developing countries. Table 7 shows some of the existing external and internal imbalances in the world economy.

As shown in Table 8, the prospective patterns of domestic and foreign trade demand in 1985-90 are radically different from those prevailing in the first half of the 1980s. Domestic demand is expected to weaken in the United States, while it should continue to remain strong in Japan and Western Europe. This new pattern of demand, together with the lagged effects of exchange rate developments in the period 1985 to mid-1988, should exert a strong influence on the direction of global trade flows – towards Western Europe and Japan. Although the overall level of imports into the developing countries is also expected to grow moderately, the recovery for the middle-income group is projected to be rather weak, mainly because of the heavily indebted countries. This is also reflected in the projected low rate of growth of domestic demand in the heavily indebted countries. Therefore, only Japan and Western Europe are expected to support growth in world demand in the medium term.

3.2 Deregulation of Markets

Since the early 1980s, the world economy has witnessed widespread *deregulation* of product, labor and financial markets. Also, privatization of publicly owned enterprises has taken place in many industrial and a number of developing countries during the same period.[13/] A number of industries, ranging from airlines to telecommunications, have been deregulated in some of the industrial countries, and the process is spreading to other countries. The transition has not been smooth in all cases, and in some instances the larger firms seem to have benefited disproportionately from deregulation.

In general, the major aim of privatization schemes has been to promote economic efficiency and increase the level of competition and remove the existing price distortions. These reforms, which have taken place in nearly all major industrial countries and some of the smaller countries since the 1980s, seem to have been quite successful in achieving their aim, particularly in airlines and telecommunications, where labor productivity has risen substantially.[14/]

[13/] For a study of structural changes in industrial countries see: OECD, *Structural Adjustment and Economic Performance*, Paris, 1987. For an analysis of major policy reforms in the centrally planned economies, see United Nations, *World Economic Survey 1989*, New York, 1989, Chapter 6, pp. 113-130.

[14/] Elizabeth E. Bailey, "Price and Productivity Change Following Deregulation: The U.S. Experience," *Economic Journal*, 1986, pp. 1-18.

TABLE 7. Major External and Internal Imbalances in the World Economy

	History			Forecast a/
	1975-80	1982	1988	1989
Current Account Balance	← bil. of dollars (or percentage) →			
Europe (major 4): level	0.1	-10.8	13.4	10.7
(percent of GNP)	(0.0)	(-0.2)	(0.3)	(0.2)
o/w Germany, Fed. Rep.: level	0.3	5.1	48.5	55
(percent of GNP)	(0.0)	(0.8)	(4.0)	(4.7)
Japan: level	1.8	6.9	79.5	61
(percent of GNP)	(0.0)	(0.6)	(2.8)	(2.2)
United States: level	-1.1	-8.7	-126.5	-116
(percent of GNP)	(-0.0)	(-0.3)	(-2.6)	(-1.9)
Asian NIEs b/: level	-2.7	-2.7	28	26
(percent of GNP)	(-2.8)	(-2.0)	(8.0)	(7.0)
17 Highly indebted countries:				
level	-21.4	-53.1	-10.1 b/	...
(percent of GNP)	(-3.0)	(-5.0)	(-1.3)	...
General Government Fiscal Balance	← percentage of GNP →			
7 Major High Income OECD Countries	-2.9	-4.0	-1.7	-1.1
o/w United States	-1.3	-3.5	-2.1	-1.6
17 Highly indebted countries d/	-3.6	-6.0	-5.0 b/	...

Source: IECAP Division, International Economics Department; IMF, World Economic Outlook, October 1989; OECD, OECD Economic Outlook, December 1989.

a/ Forecast, OECD.
b/ Hong Kong, Korea, Singapore, and Taiwan (China).
c/ Preliminary estimates, as of mid 1989.
d/ Central government fiscal balance.

TABLE 8. Changing Pattern of Domestic and Foreign Demand in High, Middle, and Low Income Countries, 1960-1990 (average annual percent change)

	Longer-Term Trend			Short-Term Projections b/
	1960-80	1982-85	1986-88 a/	1989-90
Real Domestic Demand c/				
United States	3.3	4.0	3.2	2.3
Europe d/	3.8	1.7	3.9	3.2
Japan	7.3	2.9	5.7	5.1
Middle Income Countries	6.3	-0.1	2.9	3.3
Low Income Countries (includ. China)	5.2	9.2	5.6	6.9
Highly Indebted Developing	6.2	-1.4	2.0	2.5
Growth of Imports Minus Growth of Exports e/				
United States	-0.6	7.9	-2.7	-3.6
Europe d/	0.2	-0.3	3.1	0.2
Japan	-2.4	-3.8	8.7	2.5
Middle Income Countries	2.0	-9.3	-1.0	2.0
Low Income Countries (includ. China)	1.7	5.4	-10.5	0.5
Highly Indebted Developing	2.6	-15.3	-1.0	1.5
Memo item:				
Growth of volume of merchandise imports				
United States	5.0	15.0	5.7	5.2
Europe d/	5.5	4.7	7.5	8.2
Japan	4.1	3.0	13.0	7.5

Source: IECAP Division, International Economics Department; OECD, OECD Economic Outlook, December 1989.

a/ For the developing countries, 1988 figures are preliminary estimates.
b/ Forecast for developing countries are based on March (1989) revisions of the Unified Survey.
c/ Total real domestic demand.
d/ Largest four Western European economies: France, Germany, Italy and the United Kingdom.
e/ Growth rate of real imports of goods and services minus growth rate of real exports of goods and services, both in national income account basis.

An interesting and potentially important phenomenon that has been associated with some of the recent market deregulation schemes is the resulting organizational change. Organizational innovations, such as the "hub-and-spoke" system in the airline industry, were unanticipated at the time of implementation of the deregulations, but later proved to be the key factor responsible for the observed efficiency gains.

By the beginning of the 1980s many governments in the industrial countries began to recognize that the large subsidies that were granted to various industries during the 1960s and 1970s to facilitate restructuring had instead resulted in increased inefficiency and compromised competitiveness. In addition, these subsidies had contributed to the substantial deterioration of public sector fiscal balances in these countries. It is estimated that subsidies to all sectors of economies, even if conservatively measured, average about 2.0 to 2.5 percent of GDP in the OECD countries. The average ratio for the European economies is even higher.

During the 1980s important steps have been taken in a number of industrial countries to scale back the existing industrial subsidies. However, with the exception of a few countries, the progress in this area has generally been slow and the process has been complicated by social and political considerations. Some key issues, including the less visible financial transfers to selected industries, will have to be addressed in the 1990s in the context of the Uruguay Round of trade negotiations and Project 1992 in Europe.

The industrial countries have also begun to address the issue of agricultural subsidies, which will be one of the critical issues in the 1990s with important implications for the developing countries. Such subsidies have led to serious price distortions and over-production in the industrial countries. These in turn have reduced the incentives for agricultural production in countries with a comparative advantage in that sector, such as many developing countries. The immediate impact of the removal of agricultural subsidies by industrial countries could be a significant increase in the prices of crops and farm products, which could hurt the net food-importing countries. However, in the longer run, depending on the supply responsiveness of developing countries and industrial countries with a comparative advantage in agriculture, prices could come down again as international trade moves towards a more optimal pattern.

During the 1960s and 1970s, the intervention of most governments in agriculture was more serious than that in industry. Subsidy equivalents given to producers in the agricultural sector as a proportion of domestic prices had reached 50 percent by the mid-1980s. But this ratio, as calculated by the OECD Secretariat, varies greatly among countries, ranging from about 11 percent in Australia through 50 percent in Europe to almost 80 percent in Japan. The total transfers from consumers – through higher taxes to support budgetary

outlays and higher domestic prices of agricultural products – is estimated to have reached $250-$275 billion per year for the OECD area as a whole.

Deregulation of financial markets perhaps ranks as one of the most important changes that have taken place in the world economy in the 1980s, along with the evolutionary changes in Europe and the emergence of the NIEs. It has been responsible for the massive movements of capital across countries into securities and stock-exchange markets worldwide and for the precipitous rise in the volume of transactions in foreign-exchange markets in the recent years. Over the decade of 1980s the financial sector in most of the industrial countries was transformed from perhaps the most regulated to one of the most competitive sectors. Despite some differences in the timing of the regulatory changes across countries, the lowering or dismantling of the existing barriers against movement of capital in the major industrial economies has brought about a rapid surge in the volume of financial resources, which were previously trapped in local markets, into international markets. For example, the net purchases of foreign securities by Japanese investors rose from less than $1 billion in 1978 to more than $110 billion in 1987. This process should intensify even further as the European countries, as a part of Project 1992, deregulate and unify their financial markets over the next few years.

As in the product industries, the financial services sector has also undergone substantial changes to adapt itself to changes in market environment. Most noteworthy, with the help of technological progress in the field of microelectronics, the recent regulatory changes, particularly in the United States, have produced a large number of revolutionary innovations in nearly every field in that industry, ranging from new products to organizational form. The main global impact of these changes has been to make it possible for massive movements of capital across national boundaries to take place almost instantly. Also, a broad range of new financial instruments have enabled investors to hedge against the enhanced risks.

It has long been recognized that well functioning labor markets promote high level of employment and prevent buildup of inflationary pressures by not allowing excessive wage increases above and beyond productivity gains. However, in part because of political concerns deregulation of labor markets in industrial countries has been slow to come and its effects are still uncertain. For instance, unemployment rates in many industrial countries remain high, in spite of the relatively rapid growth of output in the period 1986-89. This observation suggests persistence of structural rigidities in labor markets, particularly in Western Europe where both long-term and youth unemployment rates continue to be in double digits. Nevertheless, some important changes have been introduced in the 1980s that should result in a greater flexibility of labor markets over time.

These changes have included such measures as the reduction in the minimum wage relative to the average wage in some industrial countries and the dismantling or scaling-back of the wage-indexation practices in nearly all the industrial countries.

Aside from the ongoing process of gradually privatizing the publicly-owned enterprises, the process of market deregulation and competition-oriented reforms has thus far been slow and limited in its scope in many developing countries. A recent study shows that in a number of developing countries with a significant manufacturing base, the policy-oriented barriers to competition, such as regulatory controls, promotional instruments and trade restrictions, instituted by governments to promote industrial development have instead acted as a major constraint to efficient industrial development and structural change.[18/] The barriers to competition will have to be removed if these developing countries are to reach higher stages of industrialization. Nonetheless, a number of developing countries, including the Asian NIEs and a few socialist economies, which had made serious attempts to reform their policies and remove or lower some of the regulatory barriers to competition in industry and trade sectors, have begun to show positive results. In most of these countries, private investment has been on the rise and productivity growth rates have accelerated.

The overall impact of the changes during the 1980s on the functioning of the world markets seems to have been positive, but the process has often been complicated by conflicts among various interest groups (for example, manufacturing vs. banking interests, labor vs. management, old industries vs. new industries, etc.). But it seems that in many industries that have undergone de-regulation, important gains in efficiency have been made as a result of a higher level of competition.

While it is difficult to establish its linkage with the deregulation of markets, the degree of short-term and long-term volatility in prices, especially in the financial markets, has been significantly higher in the 1980s than in the 1970s and 1960s. Although the increased volatility has not thus far resulted in instability of financial markets, it has meant that investors assume greater risks. Under the present macroeconomic policy regime in the major industrial countries, volatility in financial prices, such as in key exchange rates and interest rates, is expected to continue to characterize the international economic environment in the 1990s.[19/] It is

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[18/] Industrial Development Division (The World Bank), "Competition Policies for Industrializing Countries," March 1989, and in summary form by Claudio Frischtak, "Competition as a Tool of LDC Industrial Policy," *Finance and Development*, pp. 27-29, September 1989.

[19/] A review of national financial deregulations in the 1980s and their implication for the 1990s is provided in: Nomura Research Institute, *The World Economy and Financial Markets in 1995*, Tokyo, 1986.

possible that the increased risks have a more pronounced effect on the developing countries' investors and traders because of their limited access to the hedging instruments in international financial markets and in the area of international trade.[17/] Thus, these countries should begin to develop and use new financial instruments that would enable them to deal more effectively with the risks, fluctuations of commodity prices, interest rates, and key exchange rates.[18/]

3.3 Financial Conditions in the 1990s

A major uncertainty associated with the medium- to long-term outlook – and one that could seriously impair the impact of the positive impulses on the global economy – concerns the monetary and *financial conditions* in the 1990s. As argued in the previous section, it is generally accepted that continued volatility of key exchange rates and interest rates, as in the 1980s, needs to be a part of any realistic scenario for the 1990s.[19/] Although volatility does *not* necessarily lead to serious instability, a key issue is the degree of volatility in financial prices that can efficiently be absorbed by the existing institutions without further damaging the growth prospects of the developing countries. For example, it is possible that the emergence of three major currency blocks (the dollar, the yen, and the ECU), and a decline in the role of the U.S. dollar in global transactions, could lead to more financial volatility. Even in the face of close cooperation on the part of the central banks of the key countries to continuously monitor and stabilize the currency markets, foreign exchange markets have at times shown much volatility on a day-to-day basis.

Besides the increased volatility in financial prices, both the direction and composition of international financial flows have undergone a profound change during the last ten years. The most radical change, however, concerns the source of international lending. In the 1970s the United States was the largest supplier of capital to the world, and the developing countries were the major recipient of foreign capital. By the

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17/ Some recent studies have argued that increased long-term volatility of real exchange rates could reduce the dynamism of international trade. For example, a recent study comparing the periods 1960-69 and 1973-84 found that the long-run volatility of real exchange rates could account for 20 to 30 percent of the observed decline of the growth rate of world trade. See P. DeGrauwe and B. de Bellefroid, "Long-run Exchange Rate Volatility and International Trade," in S.W. Arndt and J.D. Richardson, *Real-Financial Linkages Among Open Economies*, 1987, MIT Press.

18/ See T. Priovolos, "Commodity Bonds," World Bank, Working Paper, 1988.

19/ Some recent empirical results confirm that volatility (measured by either mean absolute percentage change or standard deviation) in key exchange rates and interest rates have risen sharply in the 1980s compared with earlier periods. For example, see Ronald McKinnon and David Robinson, "Dollar Devaluation, Interest Rate Volatility, and the Duration of Investment," September 1989 (processed).

second half of the 1980s Japan and Germany had emerged as the primary suppliers of capital and the U.S. became the largest single borrower and, by 1988, based on its net international investment position, the largest debtor country.

For the developing countries as a group, net commercial bank lending, which used to provide about two-thirds of the financing of the current account deficit in the late 1970s and early 1980s, has come to a near halt and is not expected to play a significant role in the 1990s. On the other hand, net direct investment which provided only about 10 percent of the financing requirements of the developing countries in the early 1980s, has risen in prominence, accounting for about 35 percent of their net financing needs, in the second half of the 1980s.[20/] However, direct investment flows have mainly been directed towards the East Asian NIEs, and have not provided much relief to the heavily indebted countries. This situation, however, could change for those developing countries that succeed in introducing the needed domestic economic reforms and restructurings to attract foreign investment. The non-debt-creating flows to the indebted countries could also increase in the future if the macroeconomic situation in these countries is stabilized and governments succeed in implementing the required reforms. Since the early 1980s private direct investment flows to the 17 heavily indebted countries have slowed down significantly and an increasing portion of the net flows have been associated with debt equity conversions.[21/] Moreover, the overall prospects for a significantly higher level of international financial flows to developing countries in the 1990s remain highly uncertain, particularly given the possibility of an increase in the demand for international capital from the Eastern European countries and the USSR.

The external debt problem of the developing countries will have to be dealt with effectively in order for the development process in these countries to resume in the 1990s. As argued earlier, and according to the baseline projections, the relatively high growth in the industrial countries (of about 3 percent per annum) envisioned for the 1990s, is not sufficient by itself to raise the rate of growth of per capita income significantly in the stagnant parts of the developing regions. This is because even a relatively strong export performance by

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20/ Foreign direct investment is playing an increasingly important role in both balance of payments financing and in industrial development of developing countries. Through direct investment, new technology and management skills can be transferred, particularly in those countries with reasonably stable domestic economic conditions, leading to an enhanced productivity growth in the recipient country. It also creates new employment and can result in a greater access to import markets in the industrial countries. See The World Bank, "The Role of Foreign Direct Investment in Financing Developing Countries," Staff Study, July 1989 (processed).

21/ For a discussion of the medium-term prospects for various sources of financing for the indebted countries see Ishrat Hussain and Saumya Mitra, "Future Financing Needs of the Highly Indebted Countries," The World Bank, 1989 (processed).

the heavily indebted developing countries will not be sufficient to substantially reduce the net transfer of resources out of these countries, which in the period 1986-88 amounted to more than $100 billion. In fact, because of the debt overhang, for the heavily indebted countries there is a substantial trade-off between the benefits of a faster pace of economic activity in the OECD area and the costs of a higher level of international rate of interest that may result from it. Thus, a significant reduction of debt service and a higher level of non-debt-creating capital inflows are what the indebted countries would need to assist them in getting back on a higher growth path.[22/]

Obviously, the financial situation faced by the developing countries could worsen under a "low growth and high interest rate" scenario in the industrial countries. Section 5.3 below provides some rough estimates for the size of the impact of a "low-case" scenario. A significant deterioration in international environment will compound the risks to the major international financial centers as an increasing number of countries find that they are unable to continue to service their external debt. Although most international commercial banks have reduced their exposure to developing-country debt in the recent years, there is a growing vulnerability of the global financial system to adverse shocks. For example, in the United States because of the rapid increase in the share of high-risk (high-yield) assets, such as junk bonds and revolving credit for consumers, in the portfolios of commercial banks, the banking system has become increasingly exposed to major financial shocks. This issue should be viewed against the backdrop of globalization of financial markets. This development, together with securitization and the rapid dismantling of barriers between various segments of the market, has increased the speed with which economic and political shocks are transmitted throughout the global financial system.[23/]

3.4 Emerging Changes in International Trade

Another major underlying current in the world economy that could have important repercussions for economic growth in the 1990s is the ongoing and prospective institutional changes associated with *international trade*. Three

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22/ Rough estimates by Bank staff suggest that in order to raise the rate of economic growth of the 17 Heavily Indebted Countries by about 2.5 percentage points (from the 1988 rate of 1.8 percent per year to their long-term trend rate of 4.5 percent per year), in addition to the domestic policy reforms by the countries themselves, the total net disbursement to these counties must be of the order of $20 billion per year, or more than double its current (1988) size.

23/ It is estimated that the ratio of cross-border transactions in securities to net issues on domestic securities markets has increased from 6 percent in 1980 to almost 17 percent in 1986 (see OECD, *Surveillance of Structural Policies*, 1989).

prominent new developments with potentially important implications for the devel ⋱ countries in the 1990s are: Project 1992 in Europe; the Uruguay Round of trade negotiations and trade reform in developing countries themselves; and Perestroyka in the USSR as well as major economic and political reforms in Eastern Europe.

World trade volume grew by 6.7 percent per year in the period 1986-1988 in response to a higher level of economic activity in the industrial countries – more than twice the rate in the first half of the 1980s. However, as discussed in Section 2, a large number of developing countries remained unaffected by the surge in international trade. This is partly because of poor domestic policies (for example, overvalued exchange rates, distorted trade regimes, etc.) and lack of adequate supply capacity in these countries and partly because the major force behind the pickup in world trade has been trade in manufactures, which still constitutes only a small portion of total exports of many developing countries. Volume of world trade in manufactures rose at an average rate of 8.5 percent per year in 1986-88, and its share in total world trade had reached 72 percent by 1988.

Also, in this period, because of a significant growth in business investment in machinery and equipment in the industrial countries and a number of developing countries – as well as a sharp increase in the level of direct investment, particularly in Asian NIEs – trade in capital goods, which accounts for about 40 percent of total manufactures trade, expanded even faster than manufactures trade as a whole.

Given the prospects for continued strong machinery and equipment investment in the industrial countries in the next decade, world trade in manufactures is likely to grow by about 6.5 to 7 percent per year, which is about 1 to 1.5 percentage points above the trend for the 1980s. This projection is not overly optimistic if the ongoing Uruguay Round of trade negotiations and unification of the European market succeed in significantly reducing the existing trade barriers, paving the way for a more liberal trading system.

The implication of the trade outlook for the developing countries crucially depends on the outcome of the global trade negotiations, the effects of European market unification and a resolution of their external debt problem. The 1992 Project aims to dismantle the existing national barriers to the free movement of labor, capital, goods, and services across the national boundaries within the European Community. The program is set to create the largest single market in the world, with nearly 320 million consumers, by the end of 1992. This project, if successfully implemented, could significantly raise the level of competition in the European market, particularly for the non-European exporters, and in markets outside Europe. The expectations of opening up of such a large market has already led to some increase in business investment in Europe by both the European

and transnational companies. Nevertheless, there will initially be some economic disruption as both national and transnational firms rationalize their Europe-based operations.

While the magnitude of the overall impact of Project 1992 on Western Europe is expected to be significant, its effect on the rest of the world is less certain. It will depend to some extent on the macroeconomic policy mix that will be followed within Europe, particularly with respect to the possible inflationary consequences of a more rapid pace of growth.[24/] Macroeconometric simulation results indicate that as a result of the completion of the internal market, the European Community's real GDP could rise by 4.5 percent (above the level that would prevail in the absence of Project 1992) in the medium term, with both productivity and employment increasing significantly.[25/]

The implications of Project 1992 for developing countries will probably vary significantly from country to country, and from region to region. After the completion of the market it is very likely that the European Community (EC) would favor products made in member countries at the expense of those from outside the area. However, as long as external barriers are not raised by the EC, and the growth performance in the area is strong, the developing countries could benefit. The impact of a more rapid pace in investment and growth of aggregate demand in Europe is expected to be positive, and significant, on the economies of commodity exporting countries, while for the major exporters of manufactures the nature of the effect will critically depend on the extent of their access to the European markets after 1992.[26/]

The Uruguay Round of Multilateral Trade Negotiations, which reached its mid-term review in late 1988, is scheduled to end in 1990. Thus far, progress has been made in a number of areas; however, several other areas have proven to be contentious, such as, agriculture, textiles and clothing (MFA), intellectual property rights (TRIPS), and safeguards. The most important deadlock has been over agriculture, as the European

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24/ For a discussion of some of the constraints within the European economy and the external effects of Project 1992 see: David Henderson, *1992: The External Dimension*, Occasional Papers 25, Group of Thirty, 1989.

25/ M. Catinat, E. Donni, and A. Italianer, "The Completion of the Internal Market: Results of Macroeconomic Model Simulations," *Economic Papers*, No. 65, Commission of the EC, September 1988. Some other studies have estimated much larger gains: a 5 to 7 percent rise in the real GDP or even a longer-term acceleration in the annual growth of potential output by as much as 1 percentage point.

26/ For a set of estimates of the magnitude of the impact of Project 1992 on Western Europe see: Alexander Italianer, "Economic Implications of the Completion of the EC Internal Market," Commission of the European Communities, Brussels, August 1989. Econometric simulations by A.F. Bakhoven ("The Completion of the Common Market in 1992," Research Memoranda No. 56, Central Planning Bureau, The Hague, March 1989) show that the effect of the market completion on the growth of industrial countries outside the community could be *negative*.

Community and the United States were initially unable to reach any agreement on a framework for reducing farm support.[27/] The reduction or elimination of agricultural subsidies in the industrial countries could, by its effect on the existing pattern of demand and supply for farm products, have important implications for the developing countries, particularly in the short run for those countries with serious food problems (see Section 3.2 above). On the issues relating to trade in textiles and clothing, the industrial countries have accepted the concept of a gradual "loosening" and phaseout of the Multi-Fibre Agreement (MFA).

An area of disagreement between industrial and developing countries in the Uruguay Round negotiations is the trade-related aspects of intellectual property rights. Some developing countries fear that with the new rules, within the GATT framework, they will face more difficulty in obtaining (or applying) the latest technology from the industrial countries.

However, if an agreement is reached in all the areas of negotiation, the trade among industrial countries will be positively affected, and the GATT framework will be significantly strengthened.[28/] The fate of the negotiations is critical to the outlook for the developing countries in the 1990s. While the overall long-term effect of these negotiations on the developing-country trade is likely to be positive, its magnitude is difficult to forecast at this time, as it crucially depends on the extent of their access to industrial-country markets in manufactures and agriculture, and on the prospects for transfer of technology. Further, there are some uncertainties regarding the longer-term implications of Project 1992 on the world economy and the evolution of trade among the developing countries (that is, the so called South-South trade).[29/] It is important to note that a large number of developing countries have, as a part of their adjustment programs during the 1980s, reformed

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27/ Some of the major differences that had surfaced among the industrial countries and with the developing countries at the ministerial meetings in Montreal, in 1988, particularly in the area of farm support, were resolved in April, 1989 in the next round of trade talks in Geneva. At that meeting the Trade Negotiations Committee of the Round adopted a text by consensus on agriculture, textiles and clothing, trade-related aspects of intellectual Property Rights (TRIPS), and safeguards.

28/ Results of an econometric study by OECD suggest that agricultural policy liberalization would have positive economic effects in the OECD area over the medium term. Model simulations indicate that, under certain assumptions, the gains could be as large as three-quarters of a percentage point of the total GDP of the area (OECD, "Macroeconomic Implications of Agricultural Liberalization," note by the Secretariat, 1988). For an analysis of the impact of trade protection in the industrial countries on the heavily indebted developing countries see: Sam Laird and Julio Nogues, "Trade Policies and the Debt Crisis," The World Bank, August 1988 (processed).

29/ For a discussion of the major issues in the Uruguay Round see: J. Michael Finger and Andrezej Olechowski (ed.), *The Uruguay Round: A Handbook for the Multilateral Trade Negotiations*, The World Bank, 1987. Also see J. Michael Finger, "The Uruguay Round: Roads to Progress," The World Bank, May 1988 (processed).

their trade policies to varying degrees. These policy changes have included measures such as reducing impediments to exports, correcting misaligned exchange rates and removal of barriers to imports. In many countries undertaking trade reforms in the 1980s, progress was made in correcting exchange rate distortions and reducing impediments to exports, with mixed results on the import side. The overall impact of these policy reforms on export performance, and thereby on economic growth, has been positive.

However, the protectionist policies of industrial countries during the 1980s seems to have discouraged further trade policy reforms in a number of developing countries, and there have even been some reversals. Growing protectionism in the area of agriculture, and a sharp rise in non-tariff barriers (NTBs) in the case of textiles and clothing and steel have seriously affected export performance of a number of developing countries. A recent Bank study estimates that the proportion of industrial-countries imports affected by NTBs doubled between 1966 and 1986, to more than 40 percent.[30/]

The medium- to long-term consequences of the ongoing reforms in Eastern Europe and the USSR, because of the prospective demand for much higher level of imports from these countries, are bound to be positive for the major exporters of manufactures in the developed and the developing groups. Because of the existing trade and financial channels and geographical proximity, the impact is expected to be particularly favorable for the Western European economies. But the magnitude of the initial effect is expected to be rather modest since the USSR (and the other reformers in Eastern Europe) may be facing a severe foreign exchange constraint, and because the Soviet trade relations, though significant, are not yet well developed.[31/] For example, in 1988 the share of the USSR in world merchandise trade was only 3.9 percent compared with more than 11.5 percent for Germany, which has an economy one-third smaller in size than that of the USSR. In this context, a major issue that could seriously challenge the developing countries in the 1990s is the enormous potential (in terms of human capital, diversity of natural resources, and large internal market) of the USSR and some of the socialist countries (including those in the developing country group) in the area of international trade and in competing for external financial resources from the industrial countries, particularly in the form of direct investment.

30/ S. Laird and A. Yeats, "Trends in Nontariff Barriers of Developed Countries: 1966 to 1986," The World Bank, PPR Working Paper No. 137.

31/ For an analysis of trade prospects of the USSR, in light of Perestroyka, see: Bela Balassa, "Reflections on Perestroyka and the Foreign Economic Ties of the USSR," World Bank, PPR Working Paper 149, January 1989.

3.5 Rapid Pace of Technological Change

Since the mid-1970s, there has been a vast number of new innovations and a significant acceleration in the rate of *technical change*. These new technologies have had widespread applications ranging from banking and telecommunication to manufacturing and pollution abatement. A large number of new products and services have appeared in the markets in a relatively short period of time, with a major impact on international trade. As intra-industry competition has intensified internationally, competing firms have tried to gain comparative advantage by demanding and utilizing the most up to date technology, both to control production costs and to improve upon their product characteristics.

Technological advance has always been a key determinant of economic growth.[32/] However, in conjunction with the other trends at work in the global economy, and also due to some distinctive features of its own, the current phase of technological progress portends to have important economic and social consequences in both the industrial and developing countries over the coming decades. This is mainly because the dominant emerging "clusters" of new technology are in the nature of new technological *paradigms* in that their potential scope far transcends sectoral boundaries and encompasses almost the entire production system of an economy. Their possible effects include generation of new products and industrial sectors, transformation of existing methods of production, further blurring of the distinction between manufacturing and services, and radical changes in the terms of international competition and comparative advantage. In this subsection, the broad contours of the new technological frontier are briefly described followed by an account of the changes engendered by them in the industrial countries. The subsection concludes with an assessment of their potential impact on the developing countries.

The most important of these technology clusters is the microelectronic information and communication technology, followed by the *new* biotechnology and the new materials technologies. These technologies are at different stages of invention, innovation, and diffusion, but a large number of important innovations are well past the invention stage and are in the process of diffusion so that it is possible to evaluate their impacts.

32/ This issue is discussed in more detail in Section 4. A summary of different theories, relating technical change to longer-term productivity growth is given in C. Freeman, "Technical Change and Long-term Economic Growth," paper prepared for The World Bank Seminar on Technology and Long-term Economic Growth, 1988. Also see M. Abramovitz, "Catching Up, Forging Ahead and Falling Behind," *Journal of Economic History*, 1986, pp. 385-406.

The most visible, advanced and best analyzed of these clusters is the microelectronics technology, which includes, on the one hand, information technologies related to storing, retrieving, analyzing and transmitting information (computers, telecommunications equipment, and microelectronic components), and on the other, application of microelectronics-based technologies to manufacturing covering robotics, CAD, CAM, computer numerically controlled machine tools, flexible manufacturing systems (FMS), and Just-In Time Systems (JITS).[33/] They are making radical changes in the service sector (including banking, consultancy, healthcare, and education), and primary industries, utilities, and agriculture. In addition, due to the supercomputer technology, a whole new range of R&D has become possible. Complex problems in both natural and social sciences are now analyzed using computer simulations. In sum, the impact of microelectronics on modern economy and society is as radical as that of electrification in the early parts of the century.

The *new* biotechnology (as opposed to the traditional biotechnology) is based on practical applications of recent advances in diverse fields, such as, molecular biology, biochemistry, microbiology, and chemical engineering, and involves use of living organisms to modify plants and animals and development of microorganisms for specific purposes. This is the cluster that is in the earliest stage of development. So far its primary impact has been on healthcare, and developments of revolutionary proportions are expected soon in chemicals and food industries, agriculture, and animal husbandry, and in the next stage, in pollution control, waste recycling, mining, and energy.

The new materials technology includes a host of product and process innovations aimed at replacing traditional materials. The product innovations include inorganic materials such as ceramics (including high temperature superconducting materials), new cements, metals and alloys; organic materials such as polymers, and nonmetallic composites. New process innovations include production techniques of forming close to final shape, and join technologies. The trend has been away from petroleum feedstocks and metals and towards polymers and ceramics essentially made up of common elements, such as oxygen, silicon, and calcium. Further, it appears that the eventual processing technologies will be relatively less resource-intensive and adaptable to local conditions. These innovations, thus, have a potential for expanding the production possibility frontier even for countries not endowed with scarce natural resources.

[33/] M.G.K. Menon, et al, (eds.) *Technical Change: Enhancing the Benefits*, Volumes I and II, Commonwealth Secretariat, 1985 and Janet Muroyama and H. Guyford Stever (eds.) *Globalization of Technology*, National Academy Press, 1987.

Almost all industries and businesses are forced to reconsider their product lines, production technologies, locational decisions, marketing strategies, research and development activities, and even the organizational form.[34/] Within the manufacturing sector, new and fast-growing industries are emerging, some sectors are experiencing sharp declines, and some industries considered mature and declining are witnessing potential revival. Manufacturing and services are becoming more interdependent with an increase in the service content of manufactured goods ("dematerialization of manufactures") and increased tradability of many service activities ("industrialization of services"). Further, the technological trends tend to mingle with the other major forces at work in the global economy described in the paper to markedly change the economic environment and to necessitate new tools for economic and financial management.

In many industries, the parameters which used to define competitiveness have been altered. Increased globalization of trade has reduced the advantages conferred by a large domestic market. New methods using multipurpose plants and modular product designs have been able to bring down the minimum economic size of production units and have been more effective in responding to increased product diversity and short life span. It is still difficult to pinpoint the new factors that are crucial in determining patterns of comparative advantage; one can only characterize them broadly as capability to evolve new ways of doing business to fully exploit technological and market opportunities. What is certain, however, is that the prospective realignment of trade and specialization on the global scale will put pressure on the existing multilateral arrangements in the 1990s. As production process becomes more segmented and more complex, it will become more likely that trade policy changes will increasingly have unintended side effects.

The pattern of generation and diffusion of innovations itself has changed radically. The technological leadership in generic innovations has passed from chemical and engineering industries to electronics and allied industries. This changes the nature of intersectoral complementaries. The innovation process itself has acquired an international dimension, as evidenced by increased tendency for international patenting; and new national and global inter-company alliances representing different types of foreign participation have emerged.[35/]

The pace of technological change and its diffusion is quickening in a large number of sectors leading to an increase in costs and risks of research and development activities as well as in uncertainty for horizontally

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[34/] For a detailed discussion of the trends and the implications for policy, see OECD (1988): *Structural Adjustment and Economic Performance*, especially, Chapter 6.

[35/] See Ashoka Mody: "Changing Firm Boundaries: Technology Sharing Alliances," The World Bank, 1989 (processed), for an analysis of recent trends in technology-related alliances between firms.

linked industries. The technological life cycle of processes and products has become briefer, speeding up the rate of obsolescence of the existing stock of both physical and human capital. While past experience indicates that for industrial countries aggregate technological unemployment is unlikely, labor displacement in specific sectors and specific skill categories would be unavoidable.[38/]

For the developing countries the technological changes under way hold out new promises and new challenges in the 1990s, depending crucially on the international economic and financial environment and the domestic state of affairs.[37/] On the one hand, as indicated above, many of the emerging technology clusters have a genuine potential for being harnessed to address the problems of the poor nations through their contributions in agriculture, rural development, food, cheaper and cleaner energy sources, healthcare, and education. On the other hand, they can radically change the existing patterns of comparative advantage against many developing countries, particularly those with low or declining investment ratios and relatively high illiteracy rates and low skill levels in the late 1980s. There is growing empirical evidence that "human capital" not only positively affects the longer-term growth potential of an economy, but that it also raises the "efficiency" (in terms of growth yield) of investment in machinery and equipment.[38/]

The product and process innovations relating to automation can undermine the current comparative advantage of developing countries in labor-intensive and technologically mature activities (for example, textiles, clothing, footwear, assembly of electronic products), and may result in these being relocated to the high income countries. This trend will be exacerbated if protectionist tendencies are strengthened in the high income countries. Also, the innovations in new materials and biotechnology has reduced the demand for the traditional exports of some developing countries (for example, copper, steel, cotton).

Some of the new technologies, once they become established in manufacturing practices, have the potential for reducing the average skill requirement. This "deskilling" effect may have a positive effect on

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38/ For details on employment effects on new technologies, see R. Cyert and D. Mowery, (eds.), *Technology and Unemployment*, National Academy Press, 1987.

37/ For details see Carl J. Dahlman: "Impact of Technological Change on Industrial Prospects for the LDCs," The World Bank, 1988 (processed) and M.G.K. Menon, et al, cited earlier.

38/ The role of human capital accumulation as a source of economic growth is being investigated intensively. See, for example, Paul M. Romer, "Increasing Returns and Long-Run Growth," *Journal of Political Economy*, Vol. 94 (October 1986): pp. 1002-37, Robert E. Lucas, Jr., "On the Mechanics of Economic Development," *Journal of Monetary Economics*, Vol. 22 (1988): pp. 3-42, and Ichiro Otani and Delano Villanueva, "Theoretical Aspects of Growth in Developing Countries," *IMF Staff Papers*, Vol. 36, No. 2 (June 1989): pp. 307-342.

developing countries by relieving the skills shortage constraint. Most of the developing countries, however, lack the scientific infrastructure needed to achieve the optimal diffusion of the new technologies.

The expanding global trade and the increasing range of new products may create some niches which can be exploited by the more technologically advanced developing countries, which include the East Asian NIEs and also a second tier of developing countries. But even these countries may be hampered if there were to be increased protectionism and any non-trade barriers to acquisition of technology.

The heavily indebted developing countries which had depended in the past on imported embodied technology may not be able to maintain and update their technology because of the high likelihood of continued financial difficulties well into the 1990s. Since the new technology is embodied in the new vintages of capital goods imported by the developing countries, these countries' access to new technology is critically dependent on their ability to generate the needed foreign exchange. If the levels of net financial flows to developing countries continues to remain low in the 1990s, many low and middle income countries may altogether lose access to the new technologies during the next decade. Thus, continuation of the present trends could lead to a further widening of the "technology gap" in favor of the industrial countries and a few leading developing economies.

3.6 Demographic Factors

Another key concern for the 1990s is the projected evolution of *population growth* in the different parts of the world. Demographic models suggest that, mainly because of the continuing decline in fertility rates, a further significant drop in the population growth of the industrial countries is to be expected in the next two decades, from the average of 0.5 percent per year in the 1980s to only 0.3 percent in the 1990s and to almost zero in the first decade of the 21st century. If these forecasts are correct, they would imply a rapid aging of their population, a significant increase in the ratio of dependents to the working age population (dependency ratio), a further shift in the balance of world population away from the industrial countries, and major social and economic consequences.

Aging will have important implications for demand for social services and the pattern of consumption, saving and investment, and for wage formation and employment, in the industrial countries in the coming decade. These effects will be more pronounced in countries such as Germany and Japan, which are expected to experience sharp increases in their dependency ratios in the 1990s. In the long run, the level of savings could be adversely affected as the share of the aged (retirees) in the population begins to rise. Lower

savings and higher consumption levels could lead to higher real interest rates and lower investment, thus a lower growth of potential output. The tightening of labor markets may lead to a sharp increase in wages, unless there were to be a significantly higher level of movement of labor from countries with low wage and high population growth to high-wage countries. Movement of labor could be very important in Europe, as a result of Project 1992 and the recent developments in Eastern Europe. Because of these expected demographic changes, the role of new production technologies, particularly in the area of robotics and automation, will become increasingly critical to the determination of growth and inflation in the industrial countries. However, the ultimate impact of a lower population growth rate on an economy is uncertain. Even though an older work force is generally more experienced and perhaps even more productive than a younger one, the net effect of the expected change in population growth on capital formation and technical progress is ambiguous[39/].

On the other hand, in many developing countries, particularly the poorer ones, the rapid pace of population growth is expected to continue well into the 1990s, albeit at a moderately slower pace than in the 1980s – from the present rate of 2.0 percent per year to 1.8 percent per year in the next decade.[40/] The most important implication is that in a large number of these countries, youth will remain by far the largest segment of the population. Some preliminary estimates show that the economies of these countries must grow at rates significantly above 4 percent per year, in order to absorb the new additions to their labor force.

A major challenge facing the developing countries is to raise their labor productivity while absorbing the expected new entries into the work force in the 1990s. This challenge is particularly serious in Africa, where population growth rates are very high and productivity levels have been declining since the later part of the 1970s. In addition, substantial resources will have to be mobilized to increase food production and water supplies, and to protect the environment, which has come under severe pressure from the increases in population.[41/] In this context, the role of human capital investment will become even more important as a major determinant of long-term growth in the developing countries. The level and quality of human capital investments

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[39/] See OECD, "Aging Population: Implications for Public Finance and the Macroeconomy: Summary and Main Issues," note by Secretariat, September 1988 (processed).

[40/] For a discussion of the relationship between population growth and development see Nancy Birdsall, "Economic Analysis of Rapid Population Growth," *The World Bank Research Observer*, January 1989.

[41/] For a summary of the main economic issues confronting the developing countries with a rapid population growth see: Allen C. Kelley, "Economic Consequences of Population Change in the Third World," Journal of Economic Literature, December 1988, pp. 1685-1728.

in these countries will have to rise significantly over the next decade in order to deal not only with the rapid rise in their youth population but also to enable their labor force to work with the new generation of technologies.

3.7 Environmental Issues

The environmental prospects for the 1990s and beyond will be the result of the interplay of a number of ongoing trends, the outcome of which could have important implications for the long-run growth prospects of both the developing and industrial countries. However, because of the complex nature of environmental problems, and the uncertainty about the precise nature of linkages between environment and economic activity, it is difficult to quantify the effects of a deterioration of the environment, or of the policy measures taken to reverse it, on long-term growth potential of the world economy.

Fundamental trends that increase the pressure on the environment are growth of population, industrial and agricultural production, and energy consumption leading to increased production of regional and global pollutants (implicated in phenomena such as damage to the ozone layer, global warming, and acid rain), deforestation, and desertification. These trends are likely to be practically irreversible in the near future.[42/] The trends that go towards mitigating the pressure are increased regulation at national and international levels representing a trade-off between cleaner environment and measured economic growth, and increasing use of cleaner production systems built around new technologies. The more rapidly growing industries and the higher income countries will be better able to shift production techniques and to afford the initial huge outlays.

As discussed later in the subsection, based on the experience of the last 15 years, control of local pollutants is likely to result in only a modest slowdown in the pace of economic growth in the conventional sense in the industrialized countries over the next decade. More importantly, given the enormous complexity of the ecosystem, there are bound to be nonlinearities and discontinuities, which, if encountered, would cause irreversible changes; for example, beyond a critical threshold, as yet unknown, further buildup of greenhouse gases in the atmosphere may radically alter the global climate. Furthermore, environmental quality in most parts of the developing world is likely to deteriorate. There is also the likelihood of greater political tension between the developing countries and the industrial countries, as the former group tries to develop and grow in the face

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[42/] Munn, R.E., "Environmental Prospects for the Next Century: Implications for Long-Term Policy and Research Strategies," *Technological Forecasting and Social Change*, Vol. 33, 1988: pp. 203-218.

of tight financial constraints, and the latter group strives to impose and enforce its environmental rules and regulations internationally.

A discussion of environmental issues as they bear upon the global outlook is complicated by the fact that industrialized countries and developing countries differ in their perspective on the environment. In the developed countries, concern about the state of the environment has become part of the mainstream political and economic processes. Initially, the developing countries showed only a peripheral interest in these issues, seeing the environmental problems as by-products of the growth process, of concern only to the affluent countries. This view began to change in the mid-seventies both as a result of action by grassroots organizations in the developing countries themselves and by international organizations. By now, it is politically acceptable to consider environmental effects of large scale developmental projects. But it has also become increasingly clear that preventing environmental degradation in the developing countries is closely tied to alleviating poverty. It is now recognized that environmental degradation results both from developmental activities and actions induced by the very lack of development[43], as well as from lack of well defined property rights.

Table 9 lists the important environmental concerns of the developed and developing countries. Issues which are considered to be of particular importance in each case are highlighted in bold. The major environmental issues in the developing countries are briefly described below, followed by an analytical discussion of the macroeconomic impact of pollution control measures in the developed countries.

The ambient air quality in many of the major metropolitan areas of the *low- and middle-income countries* is very poor. The major sources of the pollution are domestic burning of coal and firewood, automobile emissions, emissions from industrial establishments, and combustion in thermal power plants. Indoor air quality is perhaps more severe, with specific impact on the poor. Air quality in rural areas is also worsening due to large scale clearing of natural vegetation by burning and the use of firewood in enclosed spaces. Fresh water scarcity is expected to become worse in the developing countries affecting human consumption and irrigation. The tropical forest resources are being depleted rapidly. The main causes of deforestation are to meet the demand for new agricultural land, timber and fuelwood.

Agricultural land, especially of marginal land, is being degraded by intensive cultivation and the resulting soil erosion, changes in land-use for large-scale infrastructures and mining, and salinization and sodication.

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[43]Peter Bartelmus, *Environment and Development*, Boston: Allen & Unwin, 1986.

TABLE 9. Major Environmental Concerns of Developed & Developing Countries

Environmental concern	Developed countries	Developing countries
I. Natural environment		
A. Air	Air pollution	Air pollution in big cities.
B. Land, soil, and mineral resources (incl. energy)	Soil loss and deterioration; dumping of waste; risk of radioactive contamination from nuclear production	Soil erosion and degradation, desertification
C. Water courses	Freshwater shortage; degradation of recreational resources	Freshwater shortage
D. Natural vegetation	Loss of genetic resources; endangered species	Deforestation (esp. of tropical forests); loss of genetic resources; endagered species
E. Natural disasters	Floods; earthquakes	Floods; droughts; storms; earthquakes
II. Human-made environment and living conditions		
A. Bioproductive systems	Loss of cropland to urban sprawl; pests and pest resistance; contamination of crops and fish; over-exploitation of fishing grounds; disruption of mountain, wetland, freshwater (esp. from acid rains and eutrophication) and coastal ecosystem	Loss and degradation of arable land; pests and pest resistance; water shortage; pressures on fish population (overfishing, pollution); impacts of fuelwood consumption; food contamination; post-harvest losses
B. Habitat	Urban sprawl; noise	Marginal settlements (urban migration, urban growth)
C. Health	cancer; genetic and chronic effects of toxic substances	mal-nutrition; infectitious and parasitic diseases

Source: Adapted from Peter Bartelmus: Environment and Development.

The cities of developing countries are fast increasing in area and population. The most serious aspect of the urban growth is the increase of marginal settlements in and around the cities, encompassing as much as a third of the urban population, made up mainly of squatters living in makeshift housing without adequate sanitation, water, and transportation and education facilities. The growth of urbanization appears to be primarily through the natural growth of urban population with the rural-urban migration contributing to it. It turns out that cities are the areas of greatest transformation of the environment.[44/] In addition to conventional pollution problems in their most concentrated forms, urban growth leads to climatological, hydrological, geomorphological, and vegetational modifications.

In the *high-income countries*, as a result of environmental legislation, pollution control expenditures became significant in the early seventies, and after reaching a peak in the mid-seventies, have, since then, tended to decline in relation to the level of economic activity. Based on rough data collected by OECD for six countries, in the early 1980s, these expenditures have ranged between 0.4 to 0.8 percent of GDP.[45/]

Increasingly, there have been studies investigating the impact of pollution control investment on macroeconomic aggregates such as output, inflation, productivity, and employment.[46/] An OECD study, using macroeconometric simulations, found that the effects of increased pollution control expenditure on the growth of output was indeterminate, ranging from a positive impact of 1.5 percent per year (Norway over 10 years) to a negative impact of 1 percent per year (United States over 18 years). Other studies, however, have found the effect on inflation to be unambiguously unfavorable with an annual increase of from 0.3 to 0.6 percentage points.[47/] The aggregate impact on productivity was found to be slightly negative: about 8 to 12 percent of the productivity decline in the industrial countries since 1973 appears to be attributable to pollution control expenditures.[48/]

[44/] See A. Gupta, *Ecology and Development in the Third World*, London: Routledge, 1988.

[45/] OECD, *The Macroeconomic Impact of Environmental Expenditures*, 1985.

[46/] As these studies are aggregative in nature and the quality of data available is highly deficient, they have difficulty in isolating the effect of environmental regulation from the effects of a host of other factors which have affected the economic performance in the same period (such as the rise in the energy prices, demographic shifts, etc.), and as such, the results should be seen as indicative only.

[47/] A study by DRI using the same methodology gives comparable results for the United States. See Data Resources, Inc. "The Macroeconomic Impact of Federal Pollution Control Programs," 1981.

[48/] See Christiansen, Gregory B., and Robert H. Haveman, "The Contribution of Environmental Regulations to the Slowdown in Productivity growth," *Journal of Environmental Economics and Management*, December 1981, pp. 381-390.

Thus, environmental expenditures, to the extent that they are measurable, do not appear to have been a significant drag on economic growth, so far. In the future also, barring major regulatory escalation, their impact can be expected to continue to be modest for a number of reasons. For one, these expenditures have generally been declining in real terms as percentages of total investment. Secondly, the regulatory approach has been shifting from a control-and-command mode towards one based on economic incentives. Further, technological changes in pollution control equipment also reduce compliance costs relative to the first generation end-of-line (add-on) type of equipment. Finally, evidence available from some rudimentary disaggregated studies indicate that for some industries the new capital introduced as a response to environmental regulation and higher energy prices have resulted in overall gains in productivity.[49/] Finally, technological change, especially in the field of biotechnology, may make it possible to introduce non-polluting production processes, and new treatment techniques. It must also be noted that most of the benefits associated with pollution control measures are not reflected in measured (marketed) output. Quantitative assessment of these benefits (or increases in welfare) is quite difficult and controversial. Nevertheless, some studies have found that "benefits" due to air and water pollution control for five industrial countries ranged between 0.6 and 2.3 percent of their GDP.[50/]

Three qualifications may be added to the somewhat sanguine outlook for industrial countries given above: Simulation results suggest that the extent of disruption in economic activity, caused by the need for additional investment in pollution control, depends on whether the fiscal and monetary policy mechanisms encourage savings to increase substantially and on a sustained basis over historical levels.[51/] Secondly, the new-source bias (that is, more stringent controls, resulting in higher compliance costs, for new as opposed to old sources) present in environmental regulation, for example in the United States, acts as an incentive to prolong the life of old capital stock and is a disincentive against new investment. Finally, there are three sources of major environmental problems which can intrude in the process of economic growth: siting of hazardous waste, controlling the type and amount of toxic substances entering the economic life, and the issue of global pollutants.

[49/] OECD, 1985, cited earlier.

[50/] Myrick A. Freeman, "Some Issues in the Estimation and Use of Benefits Measures," report prepared for the Council on Environmental Quality, Washington, D.C., February 1980; and OECD, *Benefits of Environmental Policies as Avoided Damage: Summary State of Art and Conclusion*, Paris, 1983.

[51/] Ridker, Ronald G. and William D. Watson, "Long-run Effects of Environmental Regulation", in Peskin, Henry M., Paul R. Portney, and Allen V. Kneese, (eds.), *Environmental Regulation and the U.S. Economy* (Baltimore: Johns Hopkins University Press for Resources for the Future, 1981).

3.8 Availability of Material Resources

Over the past two decades, the so-called "growth debate" (that is, pro-growth versus zero-growth) has been mainly concerned with the *possibility* (as well as the *desirability*) of sustained economic growth in the conventional sense[52/]. As regards the sustainability of growth issue, the adequacy of natural resources in the face of growing population and income, has generally served as the dividing line. More recently, employing a materials balance model to synthesize economic principles and physical laws (such as the second law of thermodynamics), it has been argued that the very long-run optimal path of production and consumption leads to a stationary state with zero growth[53/]. While the debate has demonstrated the inevitability of *eventual* transition to a zero-growth society, the questions have become focussed on the time horizon and the adequacy of market mechanisms and other modern institutions to cope with the impact of resource scarcity. Considering the main factors which counteract the growth retardation caused by scarcity of inputs, namely, technological progress and substitution possibilities, within our forecast horizon of 10 to 12 years, generalized resource scarcity is unlikely to be a serious constraint on economic growth. The two major problem areas are: (a) the poverty-related issue of unequal access to food and agricultural resources manifesting itself in chronic food insecurity and continual occurrence of local famines; and (b) the vulnerability of the world economy to uncertainty of supply conditions and volatility of prices in markets for conventional energy sources and other strategic minerals.

The global economic projections presented in Section 5 below are based on detailed simulation studies using individual models for selected commodities maintained by the International Commodity Markets

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52/ The quintessential anti-growth platform is the Club of Rome Report (see Meadows, D.H., et al., *The Limits to Growth*, New York, Universe Books, 1972, and the follow-up in Meadows, D.L., et al., *Dynamics of Growth in a Finite World*, Cambridge: Wright-Allen Press, 1974). In this connection, also see Daly, H.E., *Steady-State Economics*, San Francisco: Freeman and Company, 1977, and Barney, G.O., *The Global 2000 Report to the President of the U.S.: Entering the 21st Century*, New York, Pergamon Press, 1980. The predominant name associated with the standard pro-growth view is Hermann Kahn (see Kahn, H., W. Brown, and L. Martel, *The Next 200 Years: A Scenario for America and the World*, New York: William Morrow, 1976, and Simon, J.L. and H. Kahn, *The Resourceful Earth: A Response to Global 2000*, New York: Blackwell, 1984. For a balanced evaluation, see Tietenberg, T., *Environmental and Natural Resources Economics*, Glenview, Illinois: Scott, Foresman and Company, Second Edition, 1988.

53/ See Ayers, R.U. and S.M. Miller, "The Role of Technological Change," *Journal of Environmental Economics and Management*, Vol. 7 (December, 1980). The materials balance model was introduced by Kneese, A.V., R.U. Ayers, and R.G. d'Arge, *Economics and the Environment: A Materials Balance Approach*, Washington, D.C., Resources for the Future, 1970.

Division of the Bank[54]. In this section we discuss the general supply outlook for agricultural resources, energy resources and non-fuel minerals.

Considering that a very large segment of world population is malnourished[55], even after spending a major part of working time on *food production*, the availability of food has been a major drag on labor productivity (and thus output growth) in large parts of the developing world. This is being exacerbated by various factors mentioned in the section on environment, such as marginal cultivation, desertification, soil-erosion, and conversion to cash crops. Many analysts agree, however, that the available and potential food supplies in the 1990s are more than adequate for a much larger population than today's[56]. Thus, the world food problem is not one of absolute global scarcity, but of inequitable distribution, internationally and within nations, of income, of land, and of complementary inputs such as water and irrigation facilities, fertilizers, agricultural implements, and technical knowhow. This contrast of misery amidst plenty is likely to characterize the global scene in the foreseeable future unless serious efforts towards changes in institutions, price and credit policies, and distribution of landholdings are undertaken in the developing countries and the massive infusion of required capital outlay is forthcoming.

Due to increased agricultural productivity and slow growth of effective demand, real international prices of food products have generally been declining (except in the early 1970s and only episodically in 1984 and recently in 1988). The prospects for the 1990s are also for continued improvement in farm production technology and decline in real price of food grains. However, for food-importing developing countries, the domestic price of food will depend on the future price of foreign exchange. Given negative resource flows and adverse terms of trade, the cost of food imports could rise even if international prices are declining, thus reducing food available to households.[57]

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[54] See IECCM, *Price Prospects for Major Primary Commodities*, (in three volumes), Report No. 814/88, Washington, D.C.: The World Bank, November 1988.

[55] According to 1980 data, more than a third of the total population of the developing countries (excluding China) are under-nourished and about 90 percent of them live in South Asia and Sub-Saharan Africa. See The World Bank, *Poverty and Hunger: Issues and Options for Food Security in Developing Countries*, The World Bank, 1986.

[56] Projections to the year 2000 for food supplies indicate that "world food production is likely to keep pace with effective global demand, perhaps even at a lower price," Ibid. pp. 13-27. There are, however, some other studies which tend to be less optimistic about the food prospects for the 1990s. For example, see Lester Brown, "The Changing World Food Prospects: The Nineties and Beyond," Worldwatch Paper 85, October 1988.

[57] World Bank 1986, cited earlier.

The two oil-price shocks of the last decade have brought about a structural change in the world economy. Production systems predicated upon the availability of cheap and plentiful energy have given way to those geared to energy efficiency. World energy consumption grew at annual rates of 5.8 percent between 1961 and 1970, while the rate between 1970 and 1986 was less than half of that (2.5 percent) reflecting higher prices, substitution of other sources of more energy and conservation. It is assumed that further improvements in energy economy will be more modest and the global energy consumption by the year 2000 is expected to be about 37 percent higher than the 1986 level, representing an annual increase of 2.3 percent.

A major trend in the composition of energy sources in recent times has been the marked increase in the share of primary electricity mainly reflecting the expansion of nuclear energy in many parts of the world. The share of electricity in the total energy market is likely to increase in most countries albeit at a lower rate than in the seventies and early eighties because of the environmental concerns posed by nuclear energy. Another recent and significant trend has been the expansion of natural gas supplies in the centrally planned economies and in developing countries; this is expected to continue well into the future.

The Persian Gulf region will continue to be the predominant supplier of oil. Supply constraints in the industrial countries are expected to limit the supplies from non-OPEC sources and the quantity of net exports of oil from the centrally planned economies is expected to decline beyond 1995. While the relatively strong oil prices expected to prevail in the early nineties should stimulate exploration in the non-OPEC oil-exporting developing countries, their exports are likely to level off. Thus, given the projected 1.4 percent annual growth in oil demand, the OPEC share in world production (which had reached a peak of 54 percent in 1973 and had fallen to 32 percent in 1986) would reach nearly 40 percent by the year 2000.

The most promising among the currently experimental sources of energy are solar and nuclear fusion. They are not, however, likely to be significant contributors to world commercial energy supply before the next century.

In sum, given the tightness of supply vis-a-vis demand, energy is an area prone to unpredictable exogenous shocks, which could be sizeable, and which would have predictable consequences for the oil-importing and the oil-exporting countries. Thus, although global economic growth is not likely to encounter a bottleneck in energy supply, the downside risk remains of volatile oil markets causing a serious shortage of conventional energy and threatening economic growth in many parts of the world. In the face of continuing financial

difficulties, the consequence of a major adverse energy-price shock for the oil-importing developing countries would be severe.

As regards non-energy minerals, broad factors that increase the level of consumption are population growth and income growth. Environmental and social concerns act as constraints on the exploitation of mineral resources. Factors that act to alleviate material scarcity are exploration and discovery which augment the reserves, direct technological progress in mining and refining, general technological progress which leads to more efficient processes, and substitution which is often the result of process innovations in the downstream industry and progress in new materials technology. Further, as economies mature the intensity of material utilization declines because of the increasing share of services in the economic activity. However, mainly because of the expected continuation of strong investment in plant and equipment in Japan, the United States and Western Europe, real prices of key metals and petroleum are expected to begin to rise in the first half of the 1990s. The projected growth in apparent consumption for some key minerals and their real prices are reported in Table 10.

The projected growth rates of demand for all the minerals shown in the table are quite small relative to the trend values since 1960. The supply analyses for these minerals indicates that, for the projection period, it is unlikely that there will be sustained supply bottlenecks due either to exhaustion of reserves or sharp escalation in extraction costs.

The concept of reserves is a dynamic one depending as it does on the current level of technological knowledge and the incentive regime which influences exploration and R&D activity. Thus the supply of natural resources is a function *inter alia* of the policy environment assumed in the projection reported, and therefore subject to a large margin of error.

TABLE 10. Projected Growth in Apparent Consumption, and Trends in Real Prices of Selected Commodities (percent change per annum)

	Apparent Consumption				Real Price (Nominal price deflated by MUV) a/	
	Developing Countries		Industrial Countries			
	Trend	Projections	Trend	Projections	Trend	Projections
	1961-86	1990s	1961-86	1990s	1961-86	1990s
Refined Copper	7.0	3.7	1.8	1.4	-2.2	-1.7
Tin Metal	1.4	0.7	-0.9	-2.5	-1.6	1.4
Nickel Metal	6.2	3.7	3.0	0.9	-2.1	-4.5
Primary Aluminum	11.1	3.3	4.4	1.5	-1.4	-1.6
Iron Ore	7.4	3.1	1.2	0.5	-4.4	-0.6
Lead Metal	5.6	2.1	1.4	0.4	-2.0	-0.4
Zinc Metal	6.7	3.1	1.1	0.5	-0.4	-0.1
Petroleum	5.8	2.6	2.7	0.9	3.5	3.3

Source: Compiled from IECCM, (The World Bank), Price Prospects for Major Primary Commodities, Vol. III, November 1988, and "Revision of Commodity Price Forecasts," September 1989.

a/ Dollar nominated prices deflated by the Manufactures Unit Value index for the industrial countries, also denominated in dollar terms.

4. DEVELOPMENT FOCUS: INVESTMENT, TECHNOLOGICAL PROGRESS AND LONG-TERM GROWTH

4.1 The Main Issues

The rate of growth of per capita income in the long-run is chiefly determined by the change in labor productivity, which in turn is a function of the growth of the capital to labor ratio and the rate of increase in total-factor productivity, which itself is heavily influenced by technological advance.[59/] Given the major advances in knowledge that have been made during the last two decades, scientific and technological progress and its diffusion are expected to play a prominent role in productivity growth in the leading industrial countries in the next 10 to 15 years. Although it is difficult to estimate with any degree of precision the impact of technological progress on the growth prospects of the world economy to the year 2000, it is certain that the net effect will be positive and significant. The key question is how and why this effect might vary across different countries, industrial and developing, during the next decade.

An improvement in total-factor productivity is thought to capture several effects including technology and efficiency in resource allocation. However, over the *longer term*, total-factor productivity is usually taken as a measure of technological progress. Given the sharp recovery of investment in machinery and equipment in a number of industrial countries on the one hand, and the existing empirical evidence on the longer-term relationship between technological progress, investment and productivity growth on the other, the outlook for the industrial economies in the 1990s is fairly optimistic (Table 11).

For the industrial countries as a group, the rate of growth of total-factor productivity declined steadily during the past twenty years, from an average of 2.8 percent per year in the 1960s to only 0.6 percent per year in 1979-86. This secular decline was clearly reflected in the sharp drop in the labor productivity from

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59/ Assuming an aggregate production function with constant returns to scale, the rate of growth of labor productivity (output per man-hours) is equal to the total factor productivity growth (a proxy for technological progress) plus rate of growth of capital to labor ratio times the share of capital in national income, minus the change in hours of work per worker. The difference between per capita output growth and the economy-wide labor-productivity growth lies in the difference between population growth and the growth of labor force (working-age population times the participation rate), where the latter is adjusted for employment and change in hours. For a presentation of the key issues concerning long-term growth, see Stanley Fischer, "Economic Growth and Economic Policy," in V. Corbo, et. al., (ed.), *Growth-Oriented Adjustment Programs*, IMF and The World Bank, 1987. For a historical assessment of the major determinants of long-term growth see Angus Maddison, *Phases of Capitalist Development*, Oxford University Press, 1982.

TABLE 11. Gross Domestic Capital Formation in Selected Country Groups, 1960-1990

	Trend	Recent Experience			Short-term Outlook (by Organization) 1989			1990	Ratio of Investment to GDP (Constant Prices)			
	1960-1987	1980-87	1987	1988 a/	EEC	IMF	OECD	OECD	1965	1980	1985	1988 a/
Industrial Countries b/	percent change per annum								percentage			
Europe (Western)	2.8	1.3	4.8	8.5	6.9	7.0	7.5	...	24.5	23.1	20.0	21.0
o/w Germany	1.6	0.4	2.2	5.9	7.7	8.5	9.3	6.0	26.8	23.5	19.9	21.5
Japan	6.9	4.0	10.3	13.4	9.8	9.4	11.1	6.5	29.8	32.3	30.8	35.5
United States	3.1	5.0	2.6	5.8	2.3	2.2	3.6	5.1	18.7	16.0	17.7	17.8
Developing Countries c/						IBRD d/						
Sample of 87 countries	6.6	3.4	5.5	12.8		2.0			19.8	26.6	25.6	27.3
o/w Low income	8.6	9.9	6.0	20.1		-1.3			17.9	25.8	31.9	35.2
Middle-income	5.2	-1.5	5.0	4.8		6.0			21.0	27.0	21.3	21.4
o/w NIEs (Asia)	10.4	5.2	19.0	14.6		8.6			21.2	34.3	28.5	30.8
Memo items:												
Highly indebted countries e/	4.2	-5.0	3.4	1.5		5.2			19.7	25.3	17.6	17.6
Sub-Saharan Africa	3.7	-8.4	-11.1	6.5		2.5			13.6	20.8	14.0	12.4

Source: IECAP Division, International Economics Department; OECD, OECD Economic Outlook, Dec. 1989; OECD, National Income Accounts; IMF, World Economic Outlook, April 1989; Commission of the European Communities; Economic Forecasts 1989-90, September-October, 1989.

a/ Estimate; based on partial data for developing countries.
b/ For industrial countries, growth rates are those of gross fixed investment.
c/ See Annex B for the list of the 87 countries.
d/ Forecast.
e/ 17 Highly indebted countries; see Annex B for list of countries in this group.

an average of 4.2 percent per year in the 1980s to only 1.4 percent in 1980-85 (Table 12).[89/] This phenomenon, which was observed in nearly all major industrial countries, is thought to be attributable to transitory factors, such as the energy crisis, and longer-term factors, such as a slowing down of the "catch up" (with the productivity leader) effects[90/], a rapid growth of the services sector (which usually has a low productivity), and a considerable increase in the size of the public sector (which is thought to be less efficient and productive than the private sector). Also, it is important to note that the phenomenon of falling productivity was, up to the mid-1980s, strongly associated with the substantial slowdown in business investment in the industrial countries in the 1970s and early 1980s; in nearly all major industrial countries, the rate of growth of factor intensity (capital to labor ratio) declined significantly during this period. Moreover, it has been observed that there is a systematic positive relation between the rates of increase of capital intensity and the rates of growth of labor productivity, across industrial countries during periods of growth boom.[91/] This supports the so-called *embodiment hypothesis*, which states that technical progress is mainly embodied in the new investment goods. This point is discussed in Section 4.3 below.

The potential of currently available advanced technological and scientific findings holds considerable promise for future non-inflationary growth. The experience of the 1980's suggests that the existing economic and social conditions in most industrial countries, and perhaps some of the leading developing countries, would permit a rapid diffusion of new innovations.[92/] Therefore, given the projected decline in the growth of population and labor force in most of the industrial countries and a continuation of the secular decline in working hours per worker in these countries on the one hand, and the abundance of new and currently under-utilized technologies on the other, the decade of the 1990s is likely to witness a continuation of the current rebound in investment

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89/ For an analysis of the causes of productivity slowdown in the industrial countries, see J.W. Kendrick (ed.), *International Comparisons of Productivity and Causes of the Slowdown*, Ballinger Publishing Co., 1984; Assar Lindbeck, "The Recent Slowdown of Productivity Growth," *Economic Journal*, Vol. 93, March 1983; and R.C.O. Mathews, *Slower Growth in Western World*, Heinemann, 1982.

90/ See C. Adams, P. Fenton and F. Larsen, "Potential Output in Major Industrial Countries," in *IMF Staff Studies*, 1987.

91/ Moses Abramovitz, "Notes on Postwar Productivity Growth," Center for Economic Policy Research, Stanford University, Publication No. 156, March 1989.

92/ For a summary of the major implications of the new technologies in the OECD area see: OECD, *New Technologies in the 1990s: A Socio-economic Strategy*, Paris, 1988. Also see the study by C. Freeman (1987) cited earlier.

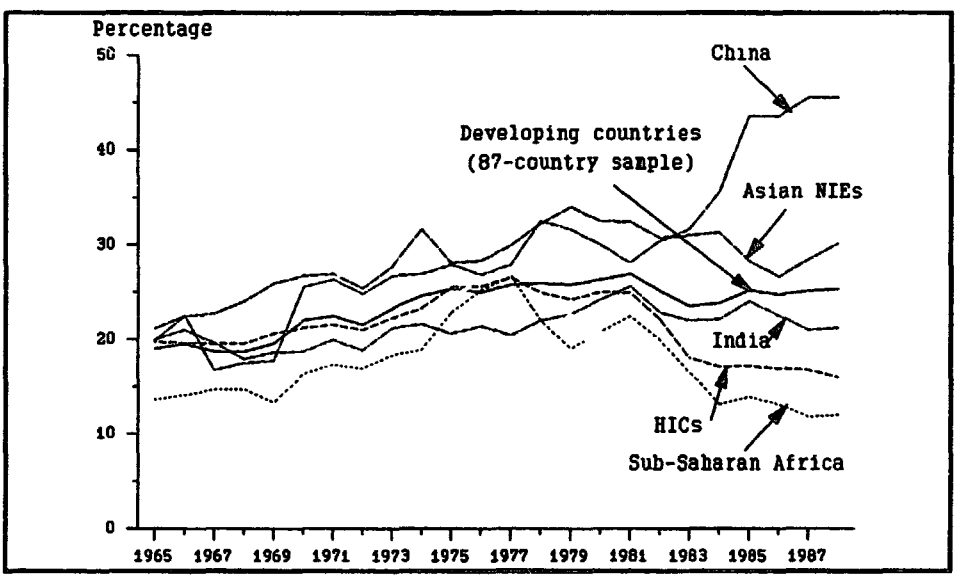
rates as these countries replace the older vintages of capital goods, renovate their infrastructure, and introduce automation on a much wider scale.

In contrast to the buoyancy of business investment in most industrial countries, as discussed in Section 2, the experience in many developing countries in the recent years has been disappointing and uneven (see Table 11 and Charts 11-13). The investment-output ratio has continued to decline in many of the poorer countries, mainly in Sub-Saharan Africa, and remains quite low in most of the heavily indebted middle-income countries, concentrated mainly in Latin America. On the other hand, private investment, particularly in the export sectors, has continued to rise rapidly in a number of countries with a large manufacturing base, such as Korea, Malaysia, Taiwan (China), and Thailand.

Chart 11

Investment Ratios: Selected Developing Countries and Groups (1965-88)

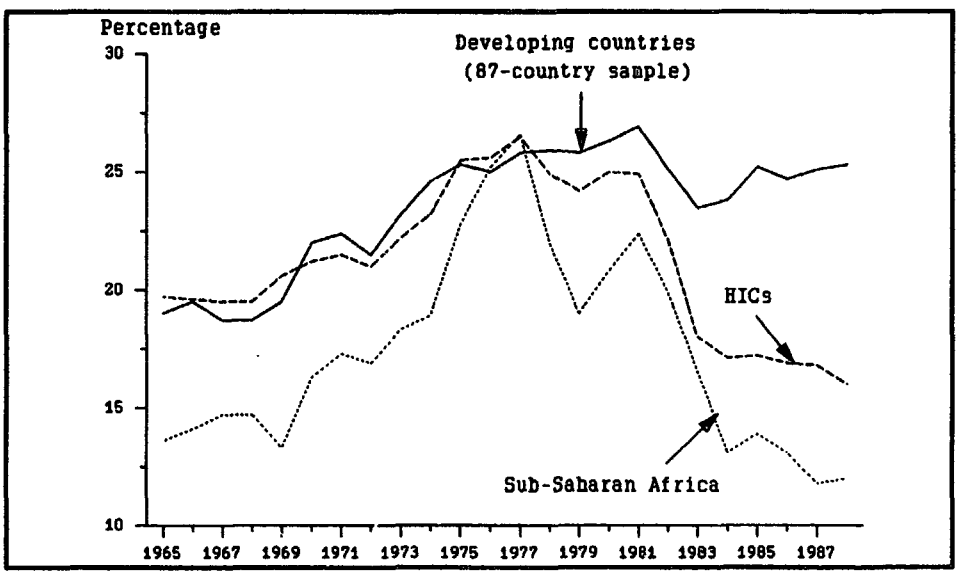
(Real gross domestic fixed capital formation to real GDP)



Source: IEC.

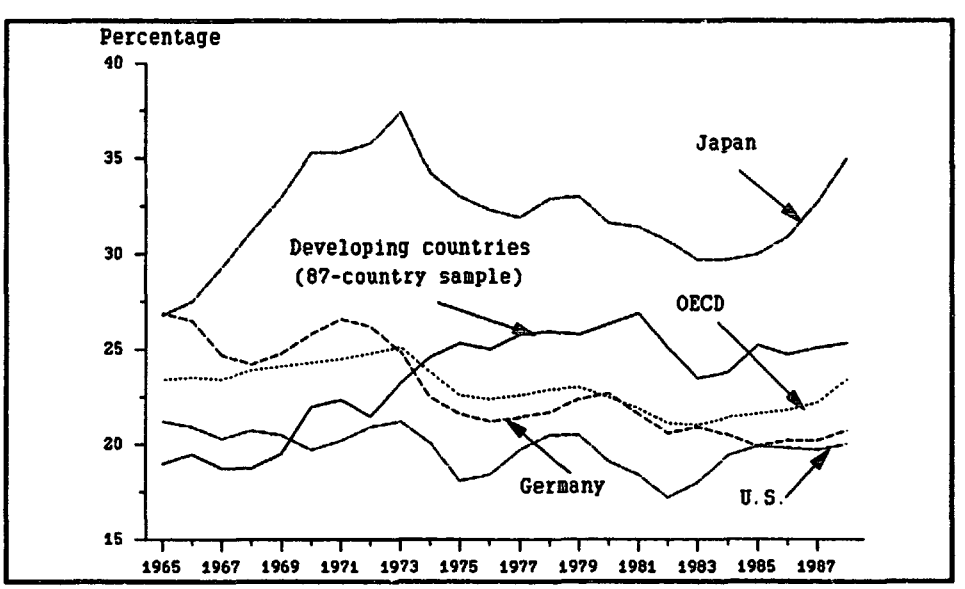
Since the 1960s, within the developing-country group, the export-oriented countries have enjoyed a much faster rate of growth of labor productivity and total-factor productivity than the developing countries that

Chart 12
Investment Ratios: Focus on Sub-Saharan Africa and HICs



Source: IEC.

Chart 13
Investment Ratios: Selected High Income Countries (1965-88)
(Gross real domestic fixed capital formation to real GDP)



Source: OECD, IEC.

had been following import-substitution strategies. For example, according to the estimates for the period 1960-73, labor productivity of Korea (which had already embarked upon a strategy of export-led growth) grew at more than twice the rate for Argentina and India (which were not following export-oriented strategies).[83/] More recent estimates (for the period 1973-86) show that while labor productivity (measured here by GDP per person employed) rose at a rate of 4.7 percent per year in Korea and 4.2 percent per year in Taiwan, it, in fact, fell in Argentina, and rose by only 1.0 percent per year in Brazil.[84/] This growing divergence of productivity growth is the main cause for the emergence of the "two development tracks" discussed in Section 2. Because of the continuation of substantial differences in investment efforts within the developing countries in the 1980s, it is likely that the existing divergence in the growth patterns will continue in the 1990s.

4.2 Determinants of Long-Term Growth

According to neoclassical theory, economic growth is accounted for by increases in factors of production (labor and capital) and technical change. The rate of growth of output would decline over the long run unless there is technological progress, which the theory assumes to be exogenously determined.[85/] However, as discussed earlier, there is increasing evidence that some of the assumptions of the neoclassical model (for example, disembodied technical change and constant returns to scale) do not hold in general, for industrial or developing countries. Indeed, several recent empirical studies have found that a number of variables usually ignored in the neoclassical analysis – principally, export performance, the size of the public sector, human capital investment, and demographic factors – have a crucial role to play in explaining the long-term growth performance of developing countries.[86/]

[83/] See Moshe Syrquin, "Productivity Growth and Factor Reallocation," in H. Chenery, S. Robinson, M. Syrquin, (eds.), *Industrialization and Growth*, Oxford University Press, 1987.

[84/] Agnus Maddison, *The World Economy in the 20th Century*, OECD, 1989.

[85/] Robert Solow, "A Contribution to the Theory of Economic Growth", *Quarterly Journal of Economics*, Vol. 70, 1956. For a review of determinants of long-term growth of industrial countries, see A. Boltho, "Can We Return to Rapid Growth?" The World Bank, PPR Working Paper 9, June 1988; and IECAP, "Can the Industrial Countries Return to Rapid Growth?" The World Bank, PPR Working Paper 209, August 1989.

[86/] See I. Otani and D. Villanueva, "Long-Term Growth in Developing Countries and Its Determinants: An Empirical Analysis,", IMF, (Processed), 1989; Robert J. Barro, "A Cross-Country Study of Growth, Saving, and Government," NBER Working Paper No. 2855, February 1989; and William R. Easterly and Deborah L. Wetzel, "Policy Determinants of Growth," The World Bank, PPR Discussion Paper No. 343, December 1989.

The background empirical work prepared for this paper, based on cross-section regressions (for example, see Table 5b above), tends to support the results of other recent studies concerning the impact of key variables on longer-term per capita income growth of developing countries, namely that: (a) export effort (growth) has a strong and positive effect; (b) investment effort, which tends to be positively correlated with the export effort, also has a significant and positive effect; (c) high rate of population growth has a negative effect; (d) high external debt burden, a proxy for a history of internal and external imbalances, has a negative effect; and (e) high inflation, also a proxy for poor domestic policies, has a negative effect.

In addition, other studies have found that domestic savings (as a percent of GDP) and government spending on education, a proxy for investment in "human capital", have positive and significant effects on long-term per capita income growth, while the size of public sector (that is, government consumption spending as a percent of GDP) has a significant negative effect. Although there seems to be a general agreement on the list of relevant variables, there is need for further empirical work in this area.

4.3 The Embodiment Hypothesis

The *embodiment hypothesis* states that new capital equipment and machinery embody the most advanced technology. Thus, new investment is the main channel through which new technology can be acquired. Based on recent empirical work, capital investment, together with the embodied technology, has been responsible for nearly two-thirds of postwar economic growth in the major industrial countries. Technological progress alone is estimated to account for about a third of the postwar growth.[87/] Although most economists have usually assumed disembodied technical progress in their research, there is an increasing body of empirical results that shows that capital investments embody technical change. These results also show that investment in turn is influenced by technological progress.[88/] Often, new scientific achievements and technological innovations are

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87/ Estimates obtained from growth accounting for the contribution of the various sources of growth are vulnerable to differences in methods of estimation and concept used. For example, the contribution of total factor productivity to average growth of output in the United States for the period 1948-79 as estimated by Denison (E. Denison, *Trends in American Economic Growth, 1929-82*, Washington, D.C., The Brookings Institute, 1985) is fifty percent higher than that by Jorgensen (Dale Jorgensen, et.al., *Productivity and U.S. Economic Growth*, Harvard University Press, 1987).

88/ In general, the embodiment assumption raises substantially the impact of capital accumulation on output growth. For example, Solow has shown that under a certain set of assumptions the impact of investment on output growth is twice as large if embodied technical progress is assumed (R. Solow, "Investment and Technical Progress," in K. Arrow, et al., (eds.) *Mathematical Methods in the Social Sciences*, Stanford University Press, 1960.

a major incentive to invest. Since a major channel through which firms can increase efficiency and productivity is installation of the most recent vintages of capital goods embodying new technology, a higher rate of investment generally results in a higher rate of total-factor productivity.[69/] In addition, better management, more skilled work force, and innovative production schemes can raise the efficiency of resource use, and thus increase total-factor productivity.

Recent statistical results strongly support the embodiment hypothesis. For most of the larger industrial economies, the correlations between the growth of total factor productivity and the growth of capital are strongly positive. Also the correlation between the growth of total-factor productivity and the growth of capital-labor ratio is positive and even stronger.[70/] These findings suggest that the technology-embodiment effect in the industrial countries has been strongly influenced by capital deepening.

Figures in Table 12 show that, for the industrial countries, historically there has been a close relationship between the overall output growth and the rate of growth of total-factor productivity. Partly because of a widespread rise in business profits and the rise in the rates of return in business sector and partly because of a faster growth of output and falling real prices of raw materials in the early 1980s, investment rates have increased in a number of industrial countries in the later half of the 1980s. The significant acceleration in investment growth in these countries, as well as in the Asian NIEs, seems to have resulted in a pickup in the growth of total-factor productivity in the same period in comparison to that in the late 1970s and early 1980s.

4.4 The Convergence Hypothesis

As discussed above, investment in machinery and equipment, through the technology-embodiment effect, raises labor productivity over and above the rise due to the capital-deepening effect. Related to this phenomenon is the so-called *convergence hypothesis*, which asserts that over the long run labor productivity (and per capita income levels) of the relatively less developed countries may converge (or "catch up") to the levels of the more advanced industrial countries. It is usually assumed that the more advanced country (or countries) is also the

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69/ Growth in total factor productivity is defined as output growth minus factor input growth, where the latter is defined as a weighted average of capital and labor inputs. Many researchers equate total factor productivity as that portion of output growth that is due to technological progress. An increase in the level of total factor productivity is tantamount to an inward shift in the capital-labor isoquant.

70/ This result in support of the embodiment hypothesis is due to Edward N. Wolff, "Capital Formation and Productivity Convergence Over the Long Term," New York University, January 1988 (processed); and A. Steven Englander and Axel Mittelstadt, "Total Factor Productivity: Macroeconomic and Structural Aspects of the Slowdown," *OECD Economic Studies*, No. 10, Spring 1988.

TABLE 12. Factor Productivity and Output Growth in the High Income OECD Countries, 1960-1990

	Longer-Term Trend	Historical Averages			
	1960s to 1987	Pre-1973 a/	1973-79	1979-86	1986-90 b/
	percent change per annum				
High Income OECD Countries					
Real GDP	3.9	5.2	2.9	2.4	3.3
Productivity					
Total c/	1.7	2.8	0.7	0.6	1.2
Labor	2.9	4.2	1.6	1.4	1.9
Capital	-0.9	-0.4	-1.4	-1.3	-0.6

Source: Based on OECD Economic Outlook, various issues.

a/ For most countries in the group the starting year is either 1960 or 1961.
b/ Forecast for 1989-90.
c/ Total factor productivity is equal to real output growth minus growth of factor inputs, which is a weighted index of capital and labor inputs.

TABLE 12a. Convergence of Productivity Levels Among Major High Income OECD Countries, 1968-1984

	Rate of Growth of Total Factor Productivity minus that of U.S.		Labor Productivity in Manufacturing Relative to U.S. (U.S. = 100)				Economy-wide Labor Productivity Relative to U.S.* (U.S. = 100)		
	1960-73	1979-86	1968	1973	1979	1984	1950	1973	1986
			(percentage)						
Japan	4.6	1.7	34.2	46.9	60.2	68.6	13.0	40.0	51.0
Germany	1.3	0.8	62.2	65.2	74.8	69.7	29.0	64.0	79.0
France	2.8	1.3	65.1	72.4	86.5	81.9	38.0	67.0	89.0
United Kingdom	0.5	1.1	58.7	59.1	57.6	57.8	54.0	64.0	75.0
Italy	3.2	0.7	59.1	63.0	69.7	67.2	33.0	66.0	74.0

Source: Calculated or directly taken from Tables 1, 3 and 11 in A. Steven Englander and Axel Mittlestadt, "Total Factor Productivity: Macroeconomic and Structural Aspects of the Slowdown," in OECD Economic Studies, No. 10, Spring 1988, pp. 7-57; and A. Maddison, The World Economy in the 20th Century, OECD, 1989.

* GDP per man-hour.

leader in technology and that its "followers" implement an appropriate set of policies tending to facilitate the "catch up."

The less advanced countries, therefore, have the potential to make sizable productivity gains, given the initial wide gap between the levels of labor productivity. Thus, according to this hypothesis, the less advanced countries are expected to grow at a faster rate than the leading country. As shown in Table 12a, there was a rapid convergence of productivity levels of the major industrial countries toward that of the United States, in the manufacturing sector, as well as others, in the 1960s and the early 1970s. The "catch up" hypothesis has been used to explain both the higher growth rates of Europe and Japan relative to the United States (the technology leader) in the postwar era and the slowdown in their growth in the 1970s and 1980s. For example, according to estimates for the manufacturing sector, the pace of convergence among the industrial countries slowed down measurably in the 1980s (Table 12a). Presumably the reason for the slowdown is the gradual reduction in the scope for "catch up" as the technological frontiers of the "followers" draw closer to that of the leader.

The empirical evidence in support of the convergence hypothesis is fairly strong.[71/] Recent evidence shows that convergence has taken place in all major industries in the manufacturing sector, across industrial countries. Furthermore, the productivity convergence is estimated to be stronger for all manufacturing than for individual industries, possibly implying that different countries have a marginal technological lead in different industries.[72/]

The convergence, though, is by no means automatic, particularly for many of the developing countries. Because of a significant slowdown in their rate of capital accumulation, the productivity gap between them and the high-income group has actually widened in the 1980s.

The convergence hypotheses has two major implications of relevance to the 1990s. First, as shown in Table 12a, significant technological gains on this account have already been made by the major industrial

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71/ See W.J. Baumol, "Productivity Growth, Convergence, and Welfare: What the Long Run Data Show," *American Economic Review*, Vol. 76, 1986 and works by Wolff (1988) and Englander and Mittelstadt (1988) cited earlier. However, some doubts have been raised about the convergence hypothesis by Romer (Paul Romer, "Capital Accumulation in the Theory of Long Run Growth," Working Paper No. 123, Rochester Center for Economic Research, 1988), who argues that most empirical studies in this area have left out important factors, such as accumulation of skills and education, from their calculations and have therefore overestimated the effect of technical progress and physical capital accumulation.

72/ D. Dollar and E. Wolff, "Convergence of Industry Labor Productivity Among Advanced Economies, 1963-1982," *Review of Economics and Statistics*, November 1988, pp. 549-558.

countries. But as labor productivity in manufacturing in the major industrial countries converges toward that of the United States, it will become more difficult for these countries to improve upon their current level of productivity just by imitating the "leader." In all likelihood, new leaders will emerge in specific fields. But the individual countries will have to raise their R&D spending in target areas in order to accelerate their pace of technical progress, more or less independently of the "leader." This development, however, puts the developing countries at a disadvantage, since for most of them it will become increasingly difficult to enter and compete in the international market which is already becoming dominated by high-technology manufactures. Foreign direct investment will assume an increasingly important role in the transfer of new technology from the leading economies to the developing countries. With the exception of the NIEs, the existing overall productivity gap between the developing countries and the industrial countries, which remains as wide today as it was in the 1950s, is not likely to diminish in the 1990s.

Second, the convergence of productivity levels of the major industrial countries during the postwar period came about mainly because of the trade-liberalization measures that led to the removal of the major trade barriers. This facilitated the transfer of technology among the industrial countries – mainly from the United States to Europe and Japan. In this context, the success of the Uruguay Round of negotiations and a rollback of the protectionist policies of the industrial countries is of critical importance to the developing countries' prospects of improving their productivity levels through the embodiment and catching-up effects in the 1990s.

In sum, a development strategy informed by the above analysis would be for the developing countries to focus on accelerating their rate of productivity growth over the next decade. To do so they would have to mobilize domestic savings and investment, reduce government consumption, and encourage foreign direct investment. Development of human capital and improvement of management quality will also be important factors in this endeavor.

5. PROJECTIONS: IMPLICATIONS FOR TRENDS TO 2000

The baseline and an alternative ("low case") scenario are presented in Tables 13-16 below. In constructing the baseline, an attempt has been made to calibrate the projections to reflect the major characteristics of the global economy in the 1990s as they are perceived in 1989.

5.1 Assumptions of the Baseline

The key assumptions in the baseline (that is, the "adjustment with growth" scenario already referred to in Section 3.1 above), such as oil and non-oil commodity prices, key exchange rates, and interest rates, are based on the current judgement of the Bank staff, using a variety of econometric models. The projections for the oil and non-oil commodity prices are based on simulations of individual commodity models, using an initial set of assumptions for manufactures exports unit values (MUVs) and GDP growth rates of the industrial countries. The key assumption concerning the macroeconomic policies of the industrial countries centers on the U.S. fiscal policy. In the baseline it is assumed that the United States will reduce its fiscal deficit gradually in the next few years, mainly through reductions in military spending and modest increases in taxes. The deficit is not assumed strictly to meet the targets set by the Gramm-Rudman-Hollings Budget Act (a balanced budget by 1992-93), but to fall significantly so as to amount to less than 2 percent of the nominal GDP by 1993 and reach the balance before the end of the decade.

It is also assumed that the main objective of monetary policy in all major industrial economies will remain that of continued downward pressure on inflation, but that, in the face of more restrictive fiscal policies, it will not have to play a leading role in generating deflationary tendencies. Monetary and fiscal policies in Europe will accommodate a relatively high rate of growth in view of their market unification project. Japan's macroeconomic policy is also assumed to be accommodative, allowing a strong growth of domestic demand.

The baseline projections for developing countries are based on the recent (as of mid-1989) judgments of the Bank's country economists, using a uniform set of global assumptions for commodity prices, exchange rates, interest rates and output growth rates in the industrial countries. The individual country results are then calibrated using a world trade model. The baseline projections to the year 2000 are summarized below and the main assumptions are shown in Table 13. The commodity price, exchange rate and interest rate assumptions are shown in Charts 14-17.

TABLE 13. Assumptions for International Economic Environment Facing the Developing Countries in the 1990s (percentage change per annum)

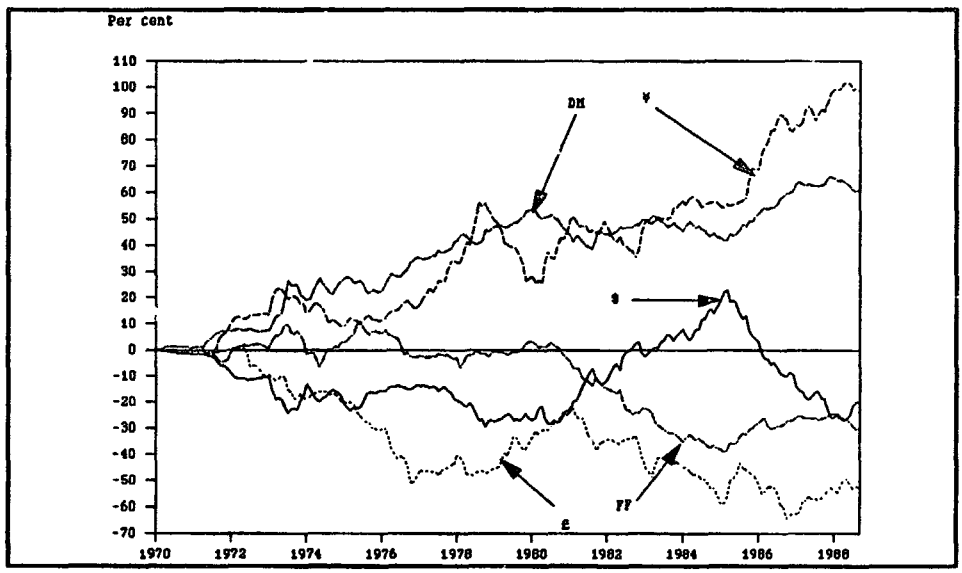
	Trend*	Recent Experience*		Assumptions for the 1990s b/	
	1965-87	1980-87	1986 a/	Baseline	Low Case
High Income OECD Countries					
Real GDP	3.3	2.6	4.0	3.0	2.4
Inflation c/	5.6	4.8	2.8	4.0	4.4
Manufactures Unit Values ($)	6.2	3.2	8.3	3.9	5.0
Real rate of interest d/	3.1	5.7	4.7	2.7	3.8
Nominal rate of interest	8.7	10.5	8.1	7.8	9.6
Low and Middle Income Countries e/					
Export value ($)	10.0	4.2	17.0	11.0	9.7
volume	5.0	5.6	10.1	5.5	4.2
Real price of oil f/	6.2	-5.0	-25.5	3.5	3.0
Real price of 33 non-oil commodities f/	-3.5	-4.0	11.0	0.6	0.0

Source: IECAP Division, International Economics Department. Based on Policy Assumptions Committee (PAC) memo dated October/10/1988 and the Unified Survey 1988/89. The Base case scenario assumes adoption of policies (by the major industrial) which reduces structural rigidities and imbalances and allows for healthy economic growth in the 1990s. The "Low case" scenario assumes that some needed policy changes are not made, interest rates reman high, there is more inflation, growth falters and there is more protectionism.

a/ Preliminary estimate.
b/ Based on projections by IECAP (dated 03/26/89).
c/ GDP deflator, in local currency terms, weighted by dollar denominated GDP in current prices.
d/ LIBOR, 6-month dollar deposit, adjusted by US GDP deflator.
e/ 90-country sample.
f/ Commodity prices deflated by dollar unit value of manufactures of the G-5 countries.

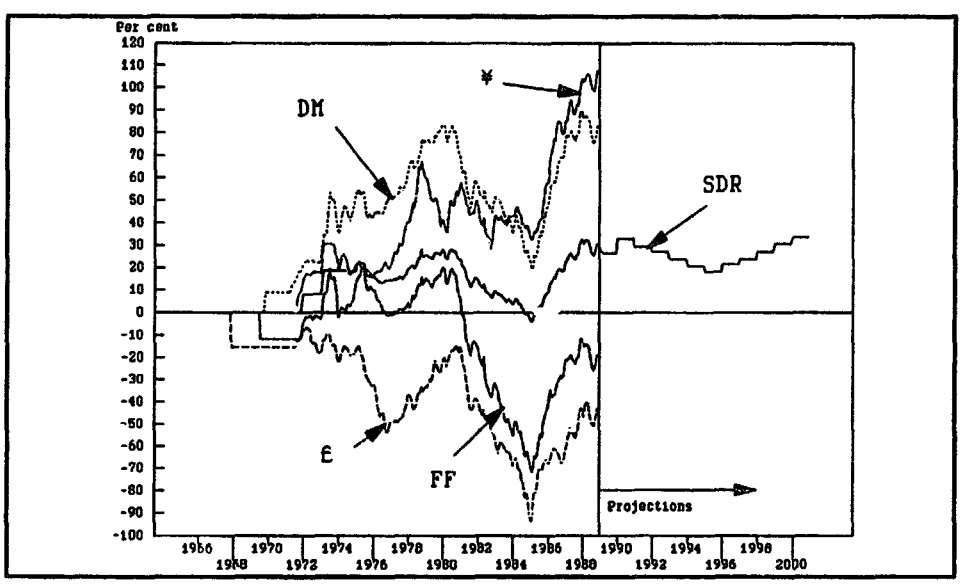
* General note: All average growth rates reported in Tables 13-16 are compound annual rates of change calculated using the beginning and ending years of the indicated interval. These rates sometimes differ substantially from trends estimated with the ordinary least squares method used in the World Development Report.

Chart 14
Nominal Effective Exchange Rates of Major Currencies
(Percentage deviations from January 1970 MERM indices)



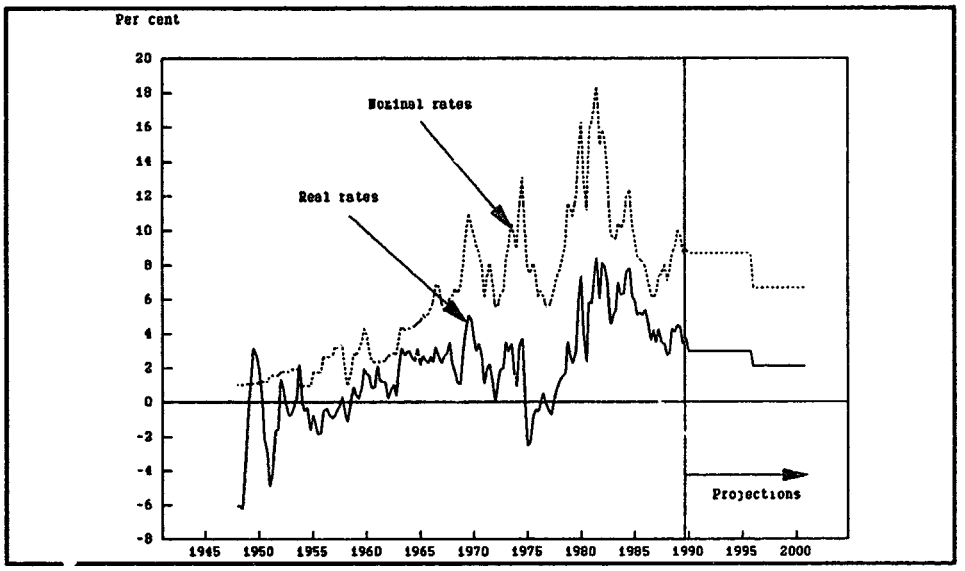
Source: IMF.

Chart 15
Exchange Rates of Major Currencies
(Percentage deviations from October 1967 parities with US dollar)



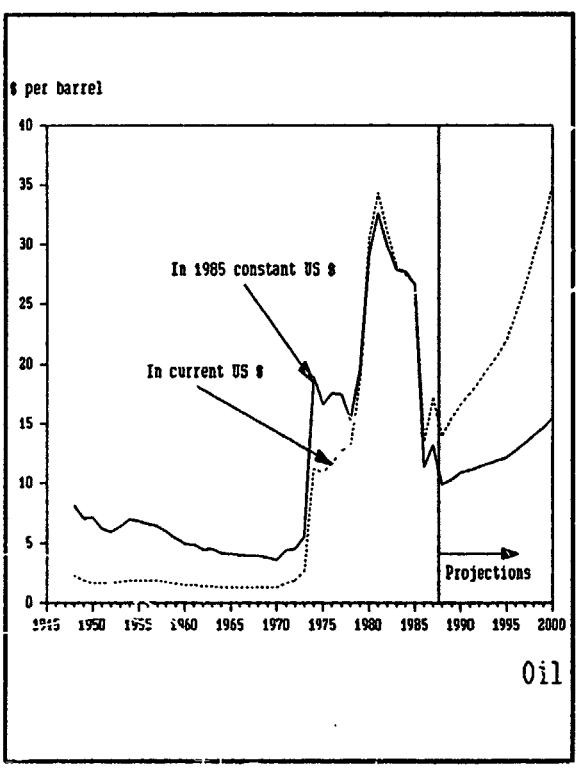
Source: IMF data; IEC projections.

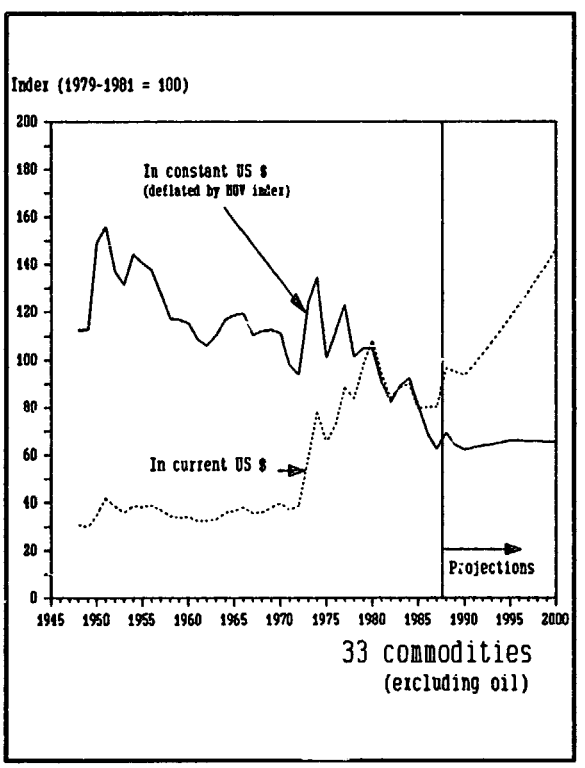
Chart 16
Nominal and Real Interest Rates
(Six-month US$ LIBOR and the same adjusted by US GDP deflator)



Source: IMF data; IEC projections.

Chart 17: Prices of Oil and 33 Non-oil Commodities





Source: IEC.

5.2 The Salient Features of the Baseline Projections

Industrial Countries

The industrial countries are expected to maintain an average real GDP growth of about 3 percent in the 1990s, which is somewhat higher than the average in the 1980s. It is assumed that the favorable effects of the new technological revolution on labor productivity will begin to be more clearly observed in the second half of the 1990s, particularly in Europe and Japan – since they have been undergoing major structural adjustments. With the industrial-country population growth slowing down to 0.4 percent per annum, the resulting average growth of per capita GDP for these countries will be about 2.6 percent per annum, which is faster than that experienced any time since the early 1970s but is still in line with their long-term trend. Per capita income growth in North America and Western Europe will be similar, at about 2.5 percent per annum, though Europe, because of Project 1992, is expected to grow somewhat faster in the mid-1990s. Japan's per capita income growth will be about a percentage point higher than the other two areas. Inflation rates in the major industrial countries are expected to remain moderate, in the range of 2-5 percent per annum, and at a somewhat lower average rate in the second half of the decade. This is because of the assumed favorable supply-side effects that would result from the major investment drive and retooling in the manufacturing industries in the earlier part of the decade.

Trade Prices

Prices of manufactures in local currency terms are expected to rise at a slower pace in the 1990s as a result of greater international competition, particularly in the second half of the period. Implications of the Uruguay Rounds of trade negotiations and the effects of the expected widespread introduction of newer technologies in the production processes could play important roles in keeping prices of manufactures in check. Prices of fuel and non-fuel commodities, which have fallen significantly in real terms in the 1980s, may begin to rise in the 1990s, at a pace moderately faster than that of the manufactures prices (Table 13). Needless to say, there is a considerable degree of uncertainty about these projected trends.

Developing Countries

The baseline projections for the developing countries present a mixed picture for the 1990s. Despite a relatively optimistic outlook for the industrial countries, the economic situation in some parts of the developing regions is expected to remain weak, particularly in the early part of the 1990s, as the process of trade-and-payments adjustment in the industrial countries continues to unfold, and as the assumed continuation of large

negative transfer of resources impedes growth by keeping the level of investment depressed in many developing countries. However, a number of countries that were low performers in the 1980s but are assumed to be successful in implementing the needed policy reforms (that is, countries successful in reducing budgetary deficits, improving incentives to private investment, building up domestic confidence, reforming and restructuring the trade sector, and privatizing public sector enterprises), are projected to increase their per capita income growth significantly by the mid-1990s. On the other hand, some of the highly indebted countries are projected to continue to face relatively low economic growth in the 1990s. Unless these countries pare down their fiscal deficits substantially, raise the level of domestic savings, attract foreign capital, and reduce the level of their debt service, they would continue to suffer a deterioration in their standard of living.

Although the average annual rate of growth of per capita income of the highly indebted countries is expected to accelerate to about 1.5 percent in the 1990s (a reversal from an average of -1.3 percent per year in 1980-87), their economic and social situation is expected to remain delicate over the next few years. Even the 1.5 percent annual growth in per capita income is based on an optimistic assumption of a gradual decline in the ratio of debt service to export and a resumption of positive financial transfers to these countries after the mid-1990s.

The per capita income of China, India, and the Asian NIEs are expected to continue to grow at rates significantly above the average for the developing countries. And, in all likelihood, the process of "graduation" will continue as, by the year 2000, most of the current NIEs will have joined the ranks of the industrial countries and several other developing economies will have become the new members of the NIE group.

On the other hand, the economic situation in many poor countries in Africa will remain precarious. The average per capita income in Sub-Saharan Africa is expected to grow by less than 1 percent per annum in the 1990s, albeit at a somewhat higher rate in the later half of the 1990s. This would indicate that even by the year 2000, average per capita income of the region will be less than in the mid-1960s. However, the projections also show that, as a result of major structural improvements in their economies during the later part of the 1980s, some of the African countries are expected to improve their economic performance considerably, relative to the prevailing conditions in the 1970s and 1980s.

5.3 A Low-Case Scenario and Quantification of Risks

Some of the key assumptions of the baseline scenario, such as the decline in interest rates in the 1990s, critically depend on a timely change in the macroeconomic policies of the major industrial countries that were responsible

for the emergence of external payments disequilibria and the high real interest rates in the 1980s. As discussed in Section 3.1, the core of the required policy changes concerns the U.S. fiscal deficit. A major violation of the baseline assumptions would be for the U.S. fiscal and current account deficits to remain large indefinitely. In that case, as the external financing of the current account deficit becomes increasingly difficult, real interest rates in the United States would have to remain high, while the dollar would continue to weaken, and these developments would tend to exacerbate the inflationary pressures in the United States. The so-called "low case" scenario (reported in Tables 13-16) depicts these circumstances whereby a combination of low growth and high interest rates in the industrial countries tends to retard economic growth elsewhere and thus complicate the task of economic development.

Under this scenario, the average growth of per capita real income in the low- and middle- income countries in the 1990s could fall significantly below their trend rate in the last twenty years. The highly indebted countries will be particularly affected by the higher real international interest rates. Nevertheless, the higher inflation in the industrial countries and the lower value of the dollar, under this alternative scenario, partially protect those developing countries that do not face variable interest rates on their external debts – mainly the ODA recipients and some commodity exporters (assuming that the aid flows rise in dollar terms under the low case scenario). This observation may explain why, under the low case scenario, the growth rates of the low-income countries are not much affected while those of the heavily indebted countries fall substantially below their long-term trend average (Tables 14 and 15). The Asian NIEs could lose about 1 percentage point in their expected average growth rate for the 1990s, mainly because of the slowdown in international trade. Their real per capita income growth, however, is likely to remain well above the average for the developing countries.

Caveats

The above exercise quantifies only the impact of a deterioration in the external environment faced by the developing countries; the calculations do not reflect the impact of any policy response by the developing countries to the change in the international economy. Moreover, the "low case" scenario assumes that the various risks faced by the developing countries, such as a failure of domestic policies and a deterioration in the external economic environment, are not compounded, as might well be the case. Furthermore, the "low case" scenario does not consider the possibility of a deep global financial crisis (for example, the "hard landing" scenario in Section 3.1 above). Quantification of such risks and their impact on the developing countries as a

group is both difficult and highly speculative; for different countries would be affected differently and, hence would respond differently.

However, the experience of the 1970s and 1980s has proven that countries that take the appropriate measures and adjust quickly to the changes in their external environment tend to fair much better than those that postpone the needed policy measures. According to one set of estimates, the latter group of countries could see the growth rate of their export volume decline significantly – perhaps by as much as 2 to 3 percentage points more than the adjusting countries – under the "low case" scenario as compared to the baseline average. Such a decline in exports could result in a significantly lower growth than indicated by the aggregate figures in Tables 13-16.

5.4 Options for Improved Performance

The international options for improved performance in the world economy are limited and are complex in nature. First, it should be recognized that there is only a limited room for further improvement in the growth performance of the industrial countries. Barring any unforeseen adverse shock, all major industrial economies, with the exception of the United States, are expected to grow at or near their potential in the next few years. This is the main outcome of the baseline scenario, one that makes it a fairly optimistic scenario for the industrial countries. Thus, a significantly higher growth acceleration than in the baseline would only mean higher inflation and higher nominal interest rates. Given the experience of the 1980s, a higher rate of output growth in the industrial countries accompanied by a higher level of international interest rates could have an adverse impact on the heavily indebted developing countries. Therefore, the best feasible option as far as the international economic environment is concerned, is a continuation of the robust growth in the industrial countries, but at relatively low and stable international real interest rates, along with liberal trading policies toward the developing countries, and generally stable exchange rates among the key currencies.

Second, given the experience of the 1980s, faster growth in the industrial countries does not necessarily lead to a higher growth in all developing countries. Many developing countries have been "bypassed" during the latest resurgence in the world trade, in the period 1986-88.[73/] This development is due in part to the domestic supply constraints in many individual developing countries, brought about by many years of low investments and poor policies, and in part to the high level of external debt which drains more of the needed foreign exchange whenever interest rates rise.

73/ Shahrokh Fardoust and Ashok Dhareshwar (1989), cited earlier.

Therefore, given the main issues highlighted in this report, there are only a few viable options that may lead to a significantly better economic performance in the developing countries in the 1990s: (a) an intensification of the ongoing international efforts to resolve the external debt problem of the developing countries; (b) a menu of domestic policy changes in the developing countries to reform trade policy, to mobilize domestic financial resources, and to remove the existing structural rigidities and supply-side constraints; and (c) policy measures, within the GATT framework and the Multifibre Arrangement, to further open up the industrial-country markets for manufactured products from the developing countries and to allow easier and cheaper transfer of technology from the industrial countries to the developing countries.

Debt Reduction Scenarios

Some preliminary work has been done to implement simulations concerning strategy toward debt and the results are reported here.[74/] The main assumptions of the debt-reduction scenarios implemented are in line with the proposed Brady Plan for the highly indebted developing countries. This plan envisions a 20 percent reduction in the level of private debt outstanding and the associated service payments over a three year period. The main conclusion of this scenario is that the impact of the plan on the GDP growth of the highly indebted countries will be quite modest if they are not allowed to increase the level of their current account deficits relative to the baseline. The reason is that some of these countries already have arrears approaching, or even exceeding, the amount of the expected debt relief implied by the plan. Specifically, under this scenario, the aggregate GDP of these countries could rise by about 1.2 percent, over the baseline projection, by the third year of the plan, amounting to an average increase of less than half a percent per year. If, the scenario is augmented, however, by allowing an increase in the level of capital flow[75/] (from a variety of international sources and/or through repatriation of domestic residents' wealth held abroad) so as to substantially reduce the net negative transfer of resources of the debtor countries, the results become much more robust. Under the augmented scenario, the aggregate level of real GDP could rise by about 5 percent over a three year period in comparison to the level in the baseline, an increase of about 1.4 percent per year.[76/]

74/ These scenarios were prepared by IECAP for the *World Development Report 1989* which contains a summary of the results (pp. 21-22).

75/ Assuming an inflow of capital of about $22 billion per year.

76/ Robert Lynn, "Interpretations of the Brady Plan," IECAP, 1989 (processed).

Direct Investment Scenario

As discussed earlier, foreign direct investment, as a non-debt-creating flow, could play a critical role in financing the investment needs of the developing countries in the 1990s. A preliminary set of estimates of the impact of a large increase in the level of such flows on the developing economies is very encouraging. For example, a $20 billion per year increase in the level of foreign direct investment flow into the developing countries (which is roughly twice the level assumed in the baseline projections presented earlier) could, after five years, result in a 10 percent increase in the level of real gross domestic investment, a 12 percent increase in the level of real imports, and a 3 percent increase in the level of real domestic absorption. The total level of external debt would stay constant, while the debt-to-export ratio would tend to decline somewhat. The impact on industrial countries is also found to be positive and significant. Because of an increase in the level of exports, their real GDP level would be 1 percent higher than the baseline by the fifth year of the simulation.[11/]

11/ This scenario was implemented by A. Jamshidi (IECAP), using the IMF's Multimod Model.

TABLE 14. Real GDP Growth Rates for Low and Middle Income Countries, 1965-2000
(percent change per annum) *

	GDP (bil. of $)	Population (millions)	Trend	Recent Experience	Projections for 1990s	
	1987	1987	1965-87	1980-88	Baseline	Low Case
All Low and Middle Income Countries	2663	3859	5.3	4.2	5.0	4.2
By Bank Regions						
Sub-Saharan Africa	137	442	3.2	0.5	3.8	3.7
excluding Nigeria	121	335	3.1	2.1	--	--
Asia	1025	2590	6.6	7.4	6.3	5.5
of which NIEs a/	230	70	9.0	8.0	6.9	5.8
EMENA b/	754	390	4.6	2.8	3.9	3.3
Latin America & Caribbean	721	404	4.6	1.6	3.9	3.0
By Bank Income Groups						
Low Income	818	2022	5.8	6.5	6.4	5.6
Middle Income	1879	1038	5.0	2.9	4.5	3.7
Memo Items:						
All Low and Middle Income minus China and India	2215	1996	4.9	2.6	4.3	3.6
Highly Indebted Countries	878	582	4.4	1.1	3.9	3.0
High Income OECD Countries	12348	747	3.3	2.7	3.0	2.4

Source: IECAP Division, International Econmics Department. See Table 13 for explanation of the scenarios.

a/ Includes Korea, Taiwan (China) and high income countries Hong Kong and Singapore.
b/ Europe, Middle East, and North Africa; Pakistan is included.

* All average growth rates are compound annual rates of change calculated using the beginning and ending years of the indicated interval. These rates sometimes differ substantially from trends estimated with the ordinary least squares method used in the World Development Report.

TABLE 15. Real GDP Per Capita Growth Rates and Their Relative size, 1965-2000
(average annual percent change) *

	Per Capita Income (in US$)	Trend	Recent Experience	Projections a/ Baseline	Projections a/ Low Case	Per Capita Income Relative to OECD Average b/	
	1987	1965-87	1980-88	1990s		1987	2000
						(percentage)	
Low and Middle Income Countries	690	3.0	2.1	3.1	2.4	4.8	5.7
Excluding China and India	1110	2.4	0.2	2.0	1.4	8.2	7.8
o/w Asian NIEs c/	3285	6.9	6.5	5.5	4.3	22.4	30.0
Highly Indebted	1510	2.1	-1.2	1.6	0.9	9.8	8.9
Sub-Saharan Africa	310	0.5	-2.6	0.7	0.6	2.2	1.8
High Income OECD Countries	16530	2.6	2.2	2.6	2.0	100	100
Memo items:						Population Relative to OECD	
Population growth						(percentage)	
Low and Middle Income Countries	...	2.2	2.0	1.8	1.8	520	594
High Income OECD Countries	...	0.8	0.6	0.4	0.4	100	100

Source: IECAP Division, International Economics Department.

a/ IECAP projections (03/26/89), see notes to Table 13 for explanation of the scenarios.
b/ Assuming average growth of GDP and population as in the baseline scenario. Disparities among countries (in 1987) may be exaggerated since purchasing power parity conversion factors (as in ICP) are not utilized here.
c/ Includes Korea, Taiwan (China) and high income countries Hong Kong and Singapore.

* All average growth rates are compound annual rates of change calculated using the beginning and ending years of the indicated interval. These rates sometimes differ substantially from trends estimated with the ordinary least squares method used in the World Development Report.

TABLE 16. Key Financial and Trade Indicators, 1973-2000 (percent and percent change)

	History			Projections: Average in 1990s a/
	1973-80	1980-88	1988	Baseline
Long-term Debt Service to Exports Ratio				
Low and Middle Income Countries	14.7	20.0	23.6	16.3
o/w Highly Indebted	26.0	35.0	32.0	30.0
Sub-Saharan Africa	6.6	19.0	19.2	27.0
Net Transfer of Financial Resources (on account of debt) to Exports b/				
Low and Middle Income Countries	8.0	-5.5	-6.6	-2.8
o/w Highly Indebted	10.0	-17.5	-16.0	-11.5
Sub-Saharan Africa	12.0	3.0	3.5	-4.5 c/
Import Volume Growth				
Low and Middle Income Countries	6.0	2.2	11.5	5.9
o/w Highly Indebted	5.5	-4.4	8.0	5.5
Sub-Saharan Africa	7.5	-6.0	-0.3	3.1

Source: IECAP Division, International Economics Department.

a/ IECAP Projections (03/26/89); see notes to Table 13 for explanation of the scenario.

b/ Ratio of net long-term disbursements (excluding grants) minus interest payments to exports of goods and services in 1980, 1988 and 1995, respectively. Interest payments and amortization in projection period are on an accrual basis (i.e., no re-scheduling or stock reduction is assumed).

c/ Assumes no debt stock reduction or private and official re-schedulings for the highly indebted countries in the region. Net transfers are assumed to stay positive for all countries other than the highly indebted countries in the region.

6. CONCLUDING NOTE: The Challenge for Development Policy

At the broad level of global analysis, there are good reasons to be optimistic about the 1990s. First, there are favorable supply-side developments in many of the high-income countries. If there are no major policy mistakes, and if the international financial markets remain reasonably stable, the remarkable rebound in investment rates observed during the past few years should promote a period of relatively rapid and non-inflationary growth in these countries. Second, considerable scope exists for a recovery of private consumption and investment in the debt-stricken developing countries, as well as in Eastern Europe and the USSR.

Nevertheless, for the developing countries, global economic forces will continue to drive a wedge between the successful manufacturing powerhouses of today, which have strong trade and investment linkages to the major global growth poles, and the rest. Introduction of new technologies in the production process may continue to favor the fast-growing economies, as a new generation of machinery and automation may continue to lessen the comparative advantage enjoyed by the "low-wage countries." The substantial differences in investment rates of the 1980s between the higher-income and other developing countries will, if not reversed, tend to widen the technological gap between them. A major improvement in the domestic policies of the poorer countries, along with a significant increase in the level of foreign financing through direct investment and other channels, could halt a further widening of the gap and prove to be a major stabilizing force in the world economy in the decade ahead.

As the decade of the 1980s comes to a close, policymakers and development specialists must take stock of both the failures and successes in the development process. The development strategies pursued in the last two decades have had a mixed record. Since the mid-1970s, the process of economic development has been severely interrupted in a large number of developing countries in part because of several upheavals in the international economy. But the experience of the 1980s generally adds weight to the view that the key to success in economic development is the domestic policies of the developing countries themselves. In particular, the countries that followed a prudent mix of macroeconomic policy, implemented structural reforms on a sustainable basis through liberalizing policies, oriented their economies toward international trade, took advantage of technical and scientific progress through continued investments in physical and human capital, pursued a more equitable distribution of income, and relied more on domestic savings for financing investment have been successful in building more adaptable and resilient economies. Such efforts would have to be intensified in the 1990s because the challenges to the development of the poorer countries are, if anything, more daunting.

In many poorer countries, a relatively minor adjustment of domestic policies, at the minimum an avoidance of policy mistakes, could lead to an extra 0.5 to 1 percentage point real income growth per year, and over a period of two to three decades, that marginal addition to the growth rate would, through the power of compounding, translate into a 20 to 30 percent increase in the standard of living. Therefore, in order to substantially reduce poverty in the developing countries over the two decades, it is imperative to sustain the growth process even in the face of an inhospitable international environment. Even among many of the so-called "high performers" of the 1980s, large segments of the population still remain in absolute poverty. If income growth in these countries, particularly China and India, remains significantly above population growth for another ten to fifteen years, the number of poor in the world will be reduced substantially. A more equitable distribution of income should allow the fruits of growth and prosperity to reach the lower income groups in these countries. It is worth noting that the "high-performing" countries of the 1980s have relatively more equal distribution of income than many of the other developing countries.

The main development challenge for the 1990s will, therefore, center on the desperate economic situation of a large number of countries that were the "low performers" of the 1980s, countries unable to introduce flexibility and resilience into their economies. In a number of these countries the developmental gains of the 1960s and 1970s, which in some cases reflected inherently transitory factors, have been partially or even entirely reversed in the 1980s as governments were forced to cut social welfare and educational spending. Yet military budgets in many of these countries have rarely been reduced to achieve needed economies. In some instances, the social and political fabric of the society has come under great strain. If the situation is not reversed, these countries will add much to the number of poor in the world in the 1990s – as they have in the 1980s.

Experience of the 1970s and 1980s shows that when there is no coherent development strategy and when the domestic macroeconomic situation is in disarray, the growth process tends to collapse in the face of a sharp deterioration in the international economic environment. When there are frequent policy mistakes and a general lack of direction in policy, every shock, internal or external, breaks down confidence; capital tends to flow out of the country; investment falters; and recoveries are weak and short-lived. In contrast, high-performing countries have been much less vulnerable to external shocks, sustaining as they did investment and productive efficiency despite adverse international conditions. Therefore, what may be required in most low-growth countries is policy action to stabilize macroeconomic conditions so as to revive confidence, thus raising private investment and accelerating productivity growth. Obviously, in most instances these measures have a better

chance of success if they are buttressed by external financial support for a long enough period of time to allow the domestic economic conditions to revive.

The major bottleneck for a sustainable non-inflationary growth in the low-performing countries is low or even falling labor productivity and inefficiency in the use of factors of production. Reforms in trade and finance sectors and a reduction of existing barriers to industrial competition could promote a more efficient allocation of resources and a higher level of investment productivity. For the smaller countries, which make up the bulk of the low-performers, diverting resources to their trade sector is the best way to enhance productivity growth. Thus, assuming that many developing countries will introduce the needed reforms, a crucial factor in their economic outlook in the 1990s will be the roll back of the existing protectionist policies in the industrial countries against the exports of developing countries. The outcome of the Uruguay Round of negotiations and Europe 1992 will be critical to the developing countries.

While a country is implementing economic reforms and is opening up its economy to the international market-place, it is important to shield the domestic economy as much as possible from major external shocks, such as a precipitous adverse change in commodity prices or interest rates. Such a protection can take the form of various compensatory financing schemes as well as financial hedging instruments being made accessible to the country through, for example, a policy-reform-and-adjustment package with international lending institutions. It appears that, thus far, only a few, and for the most part large, countries undergoing major economic reforms have been able to take advantage of such schemes. The issue needs to be considered on a much wider scale, particularly for the smaller and weaker countries that constitute the bulk of the "low performers" in the 1980s. The disadvantages of smallness of scale may call for even more attention to the adequacy of the policy framework than is typically the case for larger countries.

This paper has attempted to shed some light on the major development issues facing the low- and middle-income countries in the 1990s by identifying the major linkages between adequacy of financial resources, capital formation, access to new technology, and international competitiveness. Any set of projections should embody a view on how these linkages are likely to work out in the period ahead. The task of development is expected to become even more challenging in the next decade because environmental problems and demographic constraints are becoming more serious, thus limiting future policy options. Moreover, *developing* countries will be facing new challenges in the 1990s as they compete with the Eastern European countries and the USSR for limited supplies of international capital. The resurgence of Europe and the growing dominance of the NIEs in manufacturing trade add further weight to the conclusion that retrogression in many developing countries can only be combated by cultivating greatly increased vitality in them.

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ANNEX A

Some Empirical Evidence for the Two-Development-Tracks Hypothesis

1. A detailed analysis of the so-called Two Development-Tracks hypothesis is reported elsewhere.1/ Some of the key findings are reported below.

2. In order to determine which countries within the low and middle income group did "perform well" in the 1980s, the following statistical screening was performed:

(a) "High performers" were identified as those countries whose performance satisfied the following conditions: they had an average per capita income growth of 2.0 percent or more in 1980-88 and were also able to raise or maintain an investment to GDP ratio equal or greater than the avrage for the group in the 1980s. A total of only 13 countries out of a sample of 87 satisfied these conditions.

(b) "Low performers" were identified as those countries whose performance did not satisfy the above conditions (i.e., they had falling or stagnant growth and disappointing investment performance in the 1980s). A total of 48 countries out of a sample of 87 satisfied these conditions.

3. The overall characteristics of the two groups is reported in Table A1. Low performing countries in the 1980s on average tend to be middle income with a relatively small population.

4. Table A2 summarizes the major characteristics of each group. As the data in the table indicates, the growth and investment performance of the two groups began to diverge more significantly in the 1980s. Moreover, several key economic characteristics of the two groups are markedly different from one another. Compared to the High performers, the Low performers on average have higher external debt burden, lower manufacturing base, less open economy, lower manufacturing exports to output ratio, higher population growth and less productive investment.

TABLE A.1 Basic Characteristics of "High Performers" and "Low Performers" in 1987-88

	Number of Countries	Population in 1987 (Millions)	Real GDP in 1987 (bil. of 1980 $)	Real GDP Per Capita in 1987 (1980 $)	Average Population Per Country (Millions)	Inflation Rate in 1987 (percent)
High Performers	13	2064	1129	547	159	5.3
Low Performers	48	1005	1087	1081	21	36.1

1/ *S. Fardoust and A. Dhareshwar, "An Empirical Enquiry Into Some Aspects of the Two Development Tracks Hypothesis", processed, IECAP, World Bank, August, 1989.*

TABLE A.2 Key Economic Indicators for the High and Low Performers (all figures are averages and are in percent unless noted otherwise)

	High Performers	Low Performers	All Low and Middle Countries Sample of 87 Countries
GDP Growth			
1965-73	6.2	5.8	6.0
1973-80	5.4	4.8	5.1
1980-88	7.6	1.3	4.0
1980-88 (unweighted)	6.0	1.4	2.4
1989-2000 a/	6.1	3.7	4.8
1989-2000 (unweighted)	4.6	3.4	3.7
Investment Ratio			
1973-80	27.4	22.9	25.5
1980-88	31.7	16.7	24.0
Implied Inverse ICOR			
1980-88	0.239	0.077	0.161
Population Growth			
1965-73	2.5	2.6	2.5
1980-88	1.6	2.6	2.0
External Debt			
Debt/GDP Ratio (1987)	21	54	38
Debt/Exports Ratio (1987)	79	318	168
Trade			
Exports/GDP Ratio (1987)	26.1	17.0	22.4
Unweighted (1987)	52.3	25.1	32.7
Manufactures Exports to total Exports (1987)	73.1	32.4	56.4
Unweighted (1987)	56.1	26.0	32.2
Output Structure			
Manufactures Value Added to GDP Ratio (1986)	30.2	19.1	22.4

a/ WDR '89, baseline.

Annex B: Country Classification

Table B1:Low- and Middle-Income Member Countries

		Sub-Saharan Africa		Asia		EMENA	Latin America and Caribbean
		East Africa	West Africa	East Asia	South Asia		
Low Income	Large			China	India		
		Burundi Ethiopia Kenya Lesotho Madagascar Malawi Rwanda Somalia Sudan Tanzania Uganda Zaire Zambia	Benin Burkina Faso Central Afr. Rep. Gambia Ghana Liberia Mali Mauritania Niger Nigeria[a] Sierra Leone Togo	Indonesia	Bangladesh Myanmar Nepal Pakistan Sri Lanka	Yemen, PDR	Guyana Haiti
	Not Included in 87-Country Sample	Comoros Mozambique	Chad Eq. Guinea Guinea Guinea Bissau Sao Tome & Principe	Kampuchea Kiribati Lao Solomon Islands Vanuatu Vietnam	Bhutan Maldives	Afghanistan	
Middle Income		Botswana Mauritius Seychelles South Africa[c] Zimbabwe	Cameroon Congo Côte d'Ivoire[a] Gabon Senegal	Fiji Korea[b] Malaysia[b] Papua New Guinea Philippines[a] Taiwan, China[b] Thailand[b]		Algeria Cyprus Egypt Greece Jordan Malta Morocco[a] Portugal Syria Tunisia Turkey Yemen Arab Rep. Yugoslavia[a]	Argentina[a] Barbados Bolivia[a] Brazil[a] Chile[a] Colombia[a] Costa Rica[a] Dominican Rep. Ecuador[a] El Salvador Guatemala Honduras Jamaica[a] Mexico[a] Nicaragua Panama Paraguay Peru[a] Trinidad & Tobago Uruguay[a] Venezuela[a]
	Not Included in 87-Country Sample	Djibouti Swaziland	Cape Verde	Macao Tonga Western Samoa		Hungary Iran Iraq Lebanon Libya Oman Poland Romania	Belize Dominica Grenada St Christopher & Nevis St Lucia St Vincent & Grenadines Suriname

[a] These 17 countries make up the group of Highly Indebted Countries (HICs).

[b] These four economies (Korea, Malaysia, Taiwan (China), and Thailand), with Hong Kong and Singapore (which are shown in Table B2), form the group of Asian Newly Industrializing Economies (NIEs).

[c] Not part of Sub-Saharan Africa regional group.

Table B2: High-Income Countries and Non-Member Non-Reporting Countries

	North America	East Asia and Pacific	Europe	Middle East	Africa
High-Income OECD Countries[a] (Industrial countries[b])	Canada[d] United States[c]	Australia Japan[c] New Zealand	Austria Belgium Denmark Finland France[c] Fed. Rep. of Germany[c] Iceland Ireland Italy[d] Luxembourg Netherlands Norway Spain Sweden Switzerland United Kingdom[c]		
Other High-Income Countries	Antigua & Barbuda Bahamas Bermuda Netherland Antilles	Hong Kong[e] Singapore[e]		Bahrain Brunei Israel Kuwait Qatar Saudi Arabia United Arab Emirates	
Non-Member Non-Reporting Countries	Cuba	Korea Dem. Rep. Mongolia	Albania Bulgaria Czechoslavakia German Dem. Rep. USSR		Angola Namibia

[a] These countries, along with Greece, Portugal, and Turkey comprise the OECD countries.
[b] Group name used by the IMF.
[c] The G–5 countries.
[d] G–5 plus these countries make up the G–7.
[e] See note *b* of Table B1.

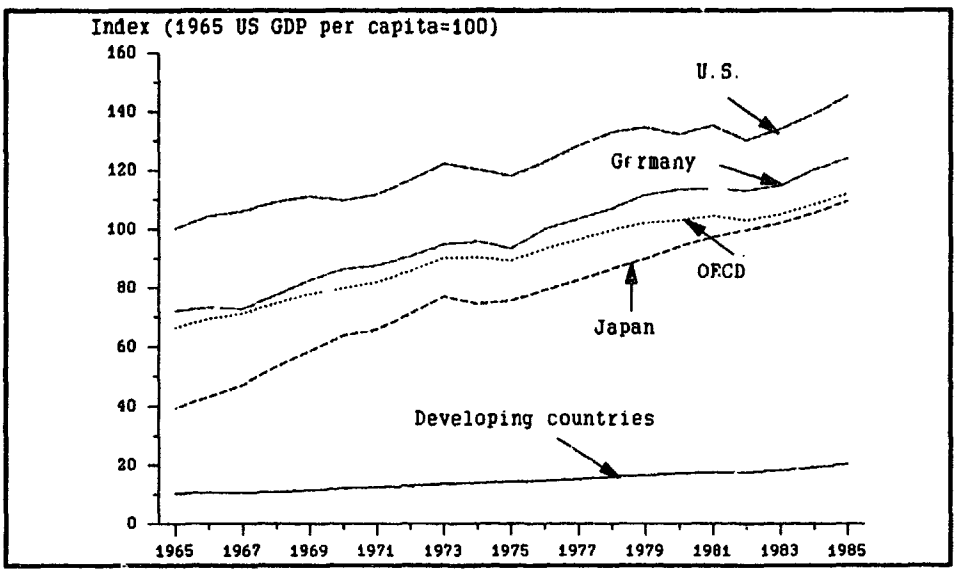
Annex C

Per Capita Income Charts Based on Penn World Table Estimates

Charts depicting the movements of real GDP per capita for various countries and country groups using estimates from the PWT4 (Penn World Table (Mark 4)) are presented here. These charts (C1, C2, and C3) are counterparts of Charts 3, 4, and 6 in the text.

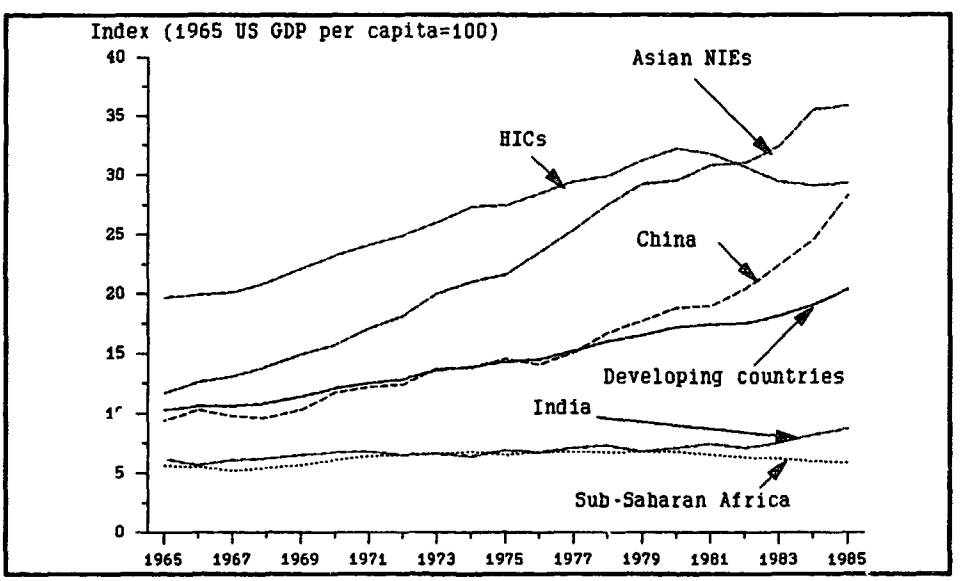
The charts are based on the RGDP1 (real gross doestic product per capita, in 1980 international prices) and POP (population) time series in the DATA TABLE diskettes supplied with Summers and Heston (1988). The DATA TABLE includes a set of international comparisons for 121 market economies and nine centrally planned economies over the period 1950-85. The group of developing countries in the annex charts consists of 85 countries made up of the 87-country sample used for the text charts (see Table B1) *minus* Seychelles and Peoples Democratic Republic of Yemen.

Chart C1: Relative GDP Per Capita: High Income and Developing Countries (1965-85)
(PWT4 estimates; 1965 US GDP per person = 100)



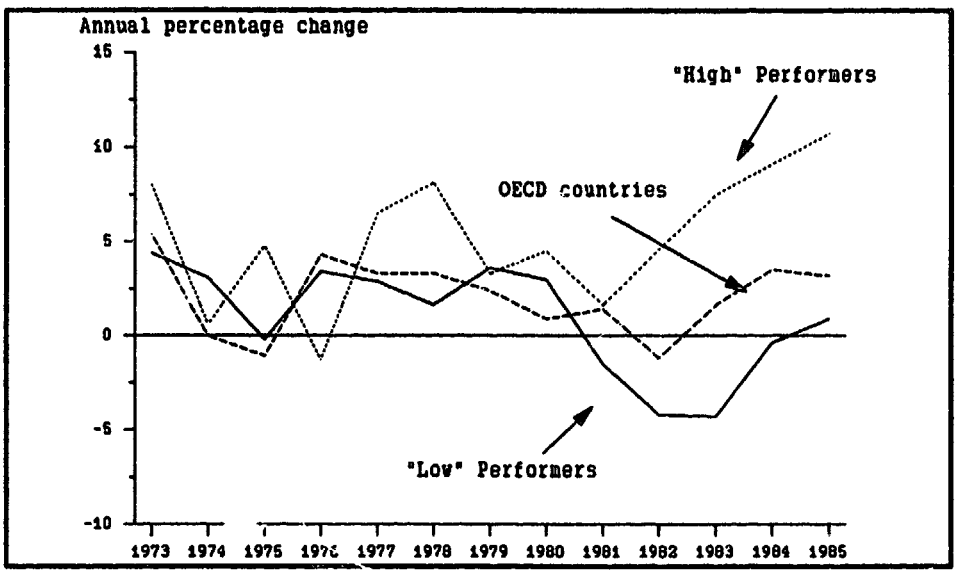
Source: Summers and Heston (1988).

Chart C2: Relative GDP Per Capita: Developing Countries (1965-85)
(PWT4 estimates; 1965 US GDP per person = 100)



Source: Summers and Heston (1988).

Chart C3
Per Capita GDP Growth of High- and Low-Performers Among the Developing Countries: PWT4 Estimates



Note: "High" Performers: sample of 13 developing countries; "Low" Performers: sample of 48 developing countries. See footnote to Table 6 in the text.
Source: Summers and Heston (1988).

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